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ABSTRACT

This booklet is designed to show teachers the many things children in preschool through grade 2 can learn about and do with numbers. Included is information on preparing to teach counting skills, getting the classroom ready, activities to do with children, projects for children and teachers, lists of materials, and computer background information. Number ideas, measurement, and geometric concepts are included. Some pages may be reproduced for use with children. (MNS)

A Good Apple Activity Book for Preschool-2nd Grade

GOOD APPLE

Let's Learn About Numbers

by Jeri A. Carroll

illustrated by Janet Skiles

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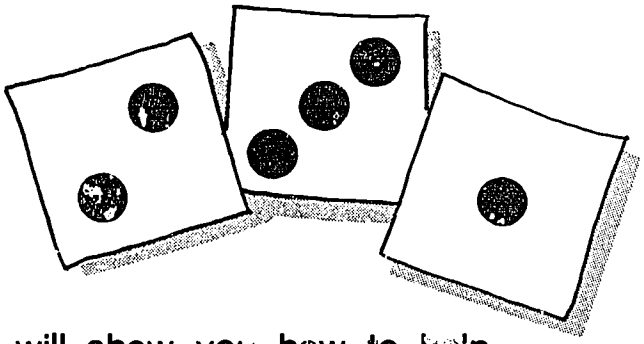
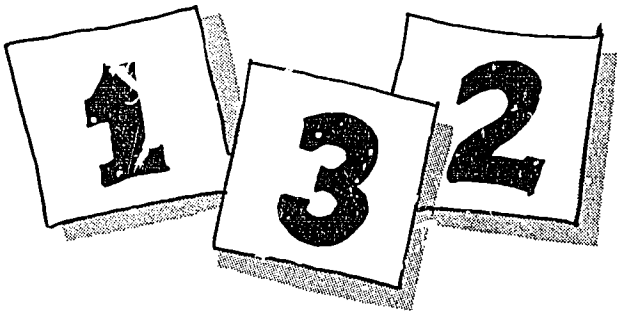
My daughters, Callie and Molly, were an incentive for me to write this book. They were also good helpers as Callie counted and Molly nodded. This book was written in hopes that it would help teachers feel as comfortable teaching math concepts as they do teaching other subjects to young children.

Table of Contents

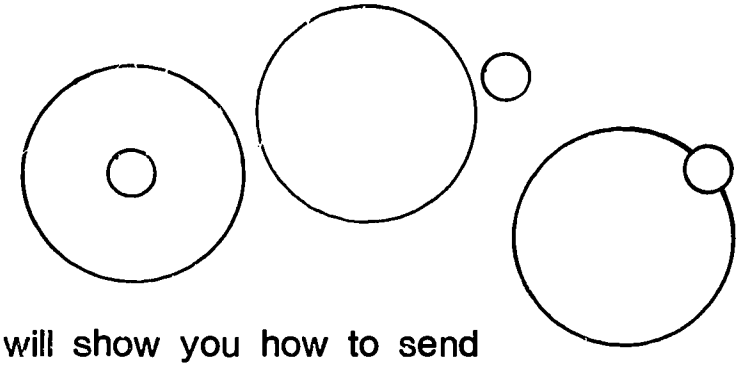
Introduction

This is a book about math and young children. It will show you the many things young children can learn about and do with numbers.

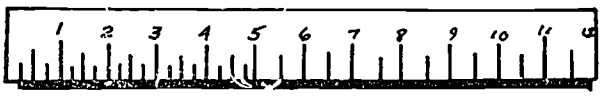




It will show you how to help them with beginning geometry concepts.



It will show you how to send them on their way measuring.



The book contains information on how to prepare yourself for teaching counting skills, how to get the classroom ready for the children, activities to do with the children, projects for the children and for you, lists of math materials available for purchase, and information about computers and computer programs for math instruction with young children.

You will have fun with math and so will the children.

Getting Ready to Count

Rote counting is the ability to say the numbers in sequential order without knowing what the numbers mean. Young children do this as early as they begin to speak. Parents love it when their child can "count" to 2. What they don't realize is that this has about as much meaning to the child as the first babblings do. But parents reinforce it and children keep on saying it.

HOW CHILDREN LEARN TO SAY NUMBERS

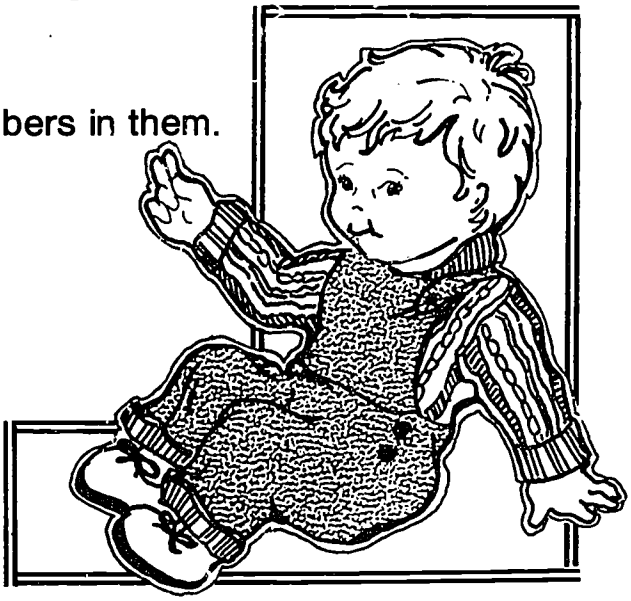
Be sure that they hear the numbers in daily counting activities.
(See Modelling Counting, page 4.)

Be sure that you can count things often during the day.
(See Modelling Counting, page 4.)

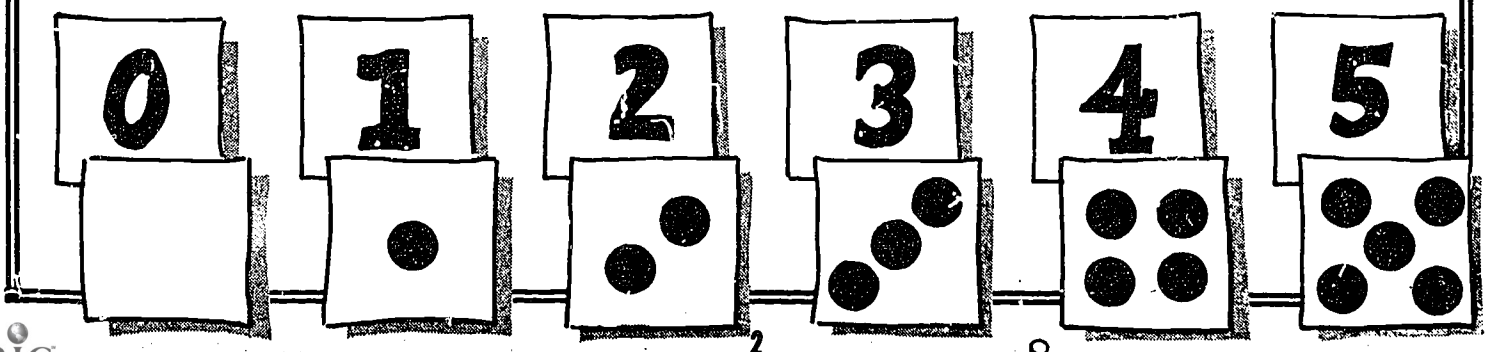
Use nursery rhymes and poems with numbers in them.
(See Nursery Numbers, page 38.)

Sing songs that refer to numbers.
(See Number Songs, page 37.)

Read stories that have numbers in them.
(See Number Stories, page 36.)

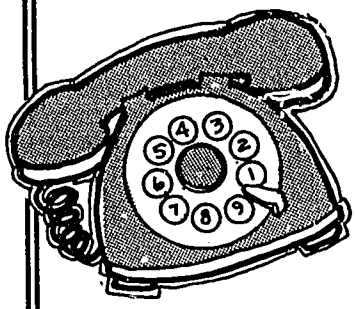


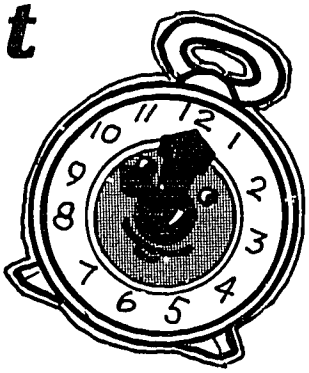
Have numbers posted in the room (but don't expect two, three, and four-year-olds to recognize them, even just to 10).



Classroom Checklist

Making Children Aware of Numbers





NUMBER RECOGNITION

After children learn to say their numbers and as they near the age of three, they will be ready to start recognizing them in their environment.

ACTIVITIES

Collect things that have numbers on them and have them available in the room.

Object	Example
1. TV logos	Channel 8
2. Radio logos	Radio 98
3. Grocery ads	Lettuce $.59
4. Filmstrip packages	3M
Tape dispensers	
5. Phone books	Phone numbers
6. Receipt books	39528
7. Books	Page numbers
8. *TV Guide*	Stations and times
9. Clocks	Traditional face
	Digital
10. Radios	Traditional dial
	Digital

Go on number hunts in the building looking for numbers.

- Room numbers
- Phones
- Clocks
- Serial numbers on various things
- House or building numbers

Counting in the Classroom

KNOWING NUMBERS

Modelling Counting

Young children can and do learn about numbers very early in life with no direct teaching from teachers. As early as a year and just shortly thereafter, they start saying numbers—one, two, etc. They don't know what they mean by saying these things, but parents many times marvel at how they can count. These same parents have "taught" their children inadvertently by counting at various times around their children. They count the toys as they take them out of the tub at cleanup time. They count how many plates they are taking out of the cupboard. They do all of this thinking out loud.

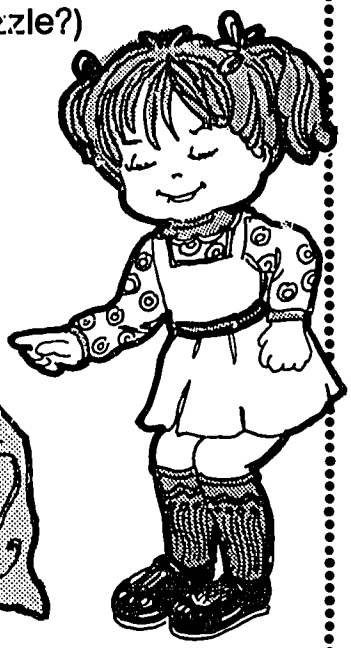
In fact, it seems as though if we as teachers would just use numbers frequently, these young children might learn enough about them that we would not have to teach the numbers to them. We need to model the use of numbers so that children can see that they are valuable and necessary.

Below are listed several things you can do in your classroom each day. There is an objective and a lead-in comment. Make sure that you say the lead-in comment to start the children thinking and to draw their attention to the fact that you are thinking.

Do each of these things out loud daily as you do your activities:

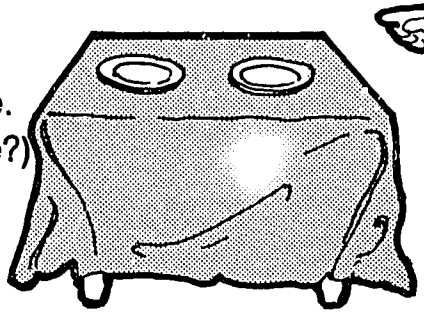
- **Count** the number of children present.
  (Let's see; I wonder how many children are here today?)
  Count them out loud.
- **Count** the number of boys in line.
  (Let's see; I think I'll see how many boys are in line.)
  Count them out loud.
- **Count** the number of girls in line.
  (I wonder if we have the same number of girls as we do boys?)
  Count them out loud.
- **Count** the number of children you have when you go places and return.
  (I hope that we have everyone with us.)
  Count them out loud.
- **Count** the number of blocks that you put back in the box.
  (I'll count to see how many I put away.)
  Count them out loud.

- **Count** the number of puzzle pieces there are in the puzzle after it is dumped out. (I wonder how many pieces there are to this puzzle?)
  Count them out loud.



- **Count** the number of coats hanging up correctly.
  (I see there are quite a few coats hanging up correctly.)
  Count them out loud.

- **Count** the number sitting at the table.
  (Let's see; how many are at this table?)
  Count them out loud.



- **Count** the number of boxes of crayons that will be needed for the number of children sitting at the table.
  (Let's see, there are five children at this table. I wonder how many boxes of crayons we will need today?)
  Count them out loud.

- **Count** the number of identification markers there are at the centers.
  (I can tell how many are supposed to be at this center.)
  Count them out loud.

- **Count** the number of children who have finished washing their hands and the number still busy.
  (I can see that one, two, **three** are finished and that one, **two** are still working.)
  Count them out loud.

- **Count** the number of children in each center.
  (I'll check and see how many are in this center today.)
  Count them out loud.

- **Count** the number of raisins you have in your little box for a snack.
  (There sure are a lot of raisins in this box.)
  Count them out loud.

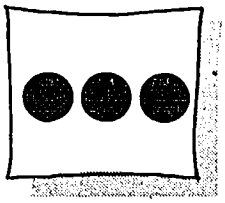
Counting Activities

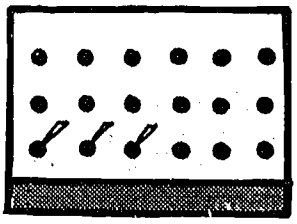
USING PEGBOARDS

Put a color strip under each row of the pegboard.

Make number cards for various levels.

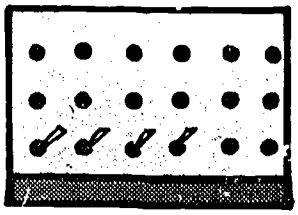
For three-year-olds:



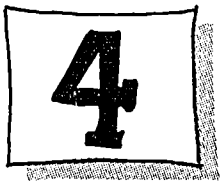


Make the card in purple.

The child is then to put 3 pegs in the purple row.



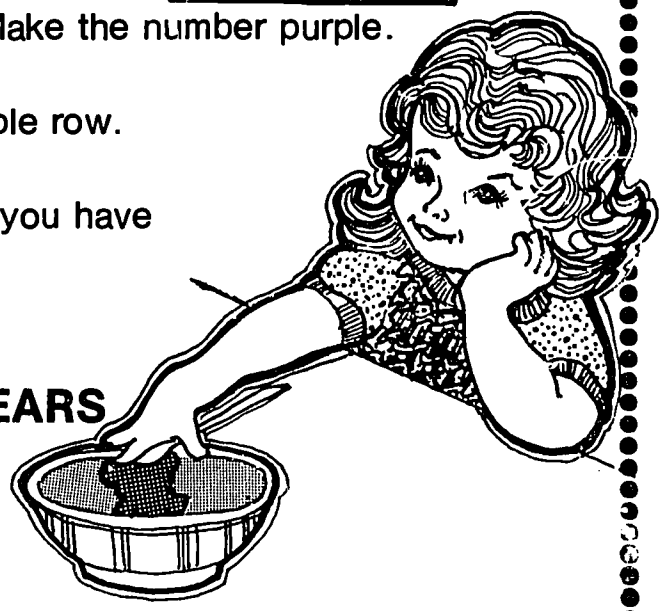
For four-year-olds:



Make the number purple.

The child is then to put 4 pegs in the purple row.

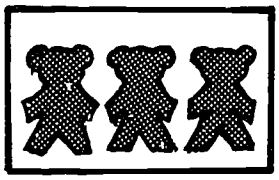
Do several numbers in the various colors you have used on the pegboard.



COUNTING BEARS

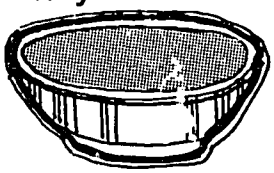
Put out a bowl of teddy bear counters.

For the three-year-olds:

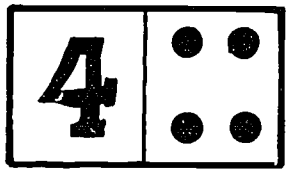


Make cards in one color.

Children are then to spoon 3 yellow bears into a yellow bowl. They can first place the bears on the card.



For the four-year-olds:



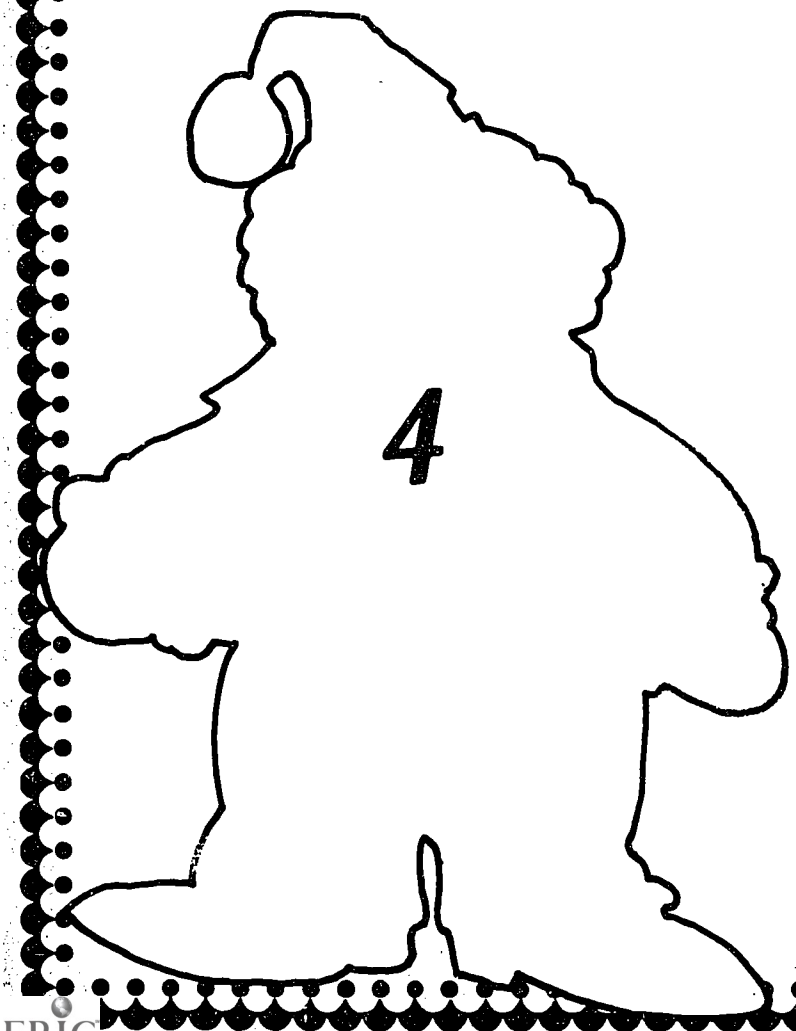
Make cards in one color.
On the back you can put ⁚⁚

The child can then spoon the correct number into the bowl.

Children need to learn to match one object with one picture.

Have the children place one object on each of the dots on the following cards. Use 1 to 5 for the three-year-olds and all 10 for the four-year-olds. Try it different days with different objects. Use teddy bears, counting discs, 1" cubes, cylinder beads, buttons, pop bottle tops.

After you have shown the children how to do this during an individual time or in group time, put all the materials in a shoe box and put it on a shelf for the kids to use when they want to. Let them have a variety of objects to place on the dots. Try to use cards with dots in traditional placement.



On the back of these cards put only the number and let the children put on the correct number of circles. As you work with the kids, count them aloud. As they learn to do it, they will count aloud, also.

Present the materials to the children at circle, group, or individual times. After you present the materials to the children, have them available for them to use when they can.

Place the number cards in a shoe box, along with many things that the children can place on the cards: small animals, cowboys, dinosaurs, magic marker tops, etc.

Children need to learn to count the correct number of objects when given no clues.

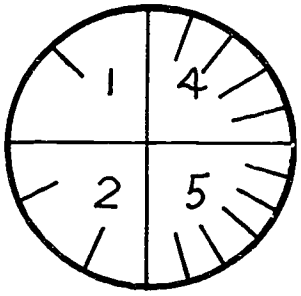
Make a set of cards similar to the one presented here. Each card should have one number on it and five areas colored in on each side of the card. You will need to use poster board for these cards.

The children are to look at the number on the card, pick up the correct number of clothespins or paper clips and put them on the correct number of marks. If you have them start in the upper right-hand side and go down and then go to the upper left-hand side and go down, you can code the card on the back so that they can self-check their work.

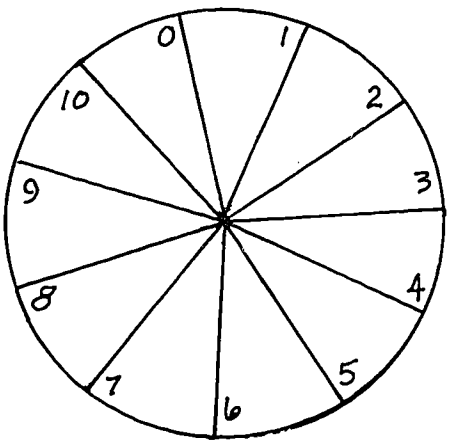
Put the cards and the clothespins in a shoe box, and then the children can get it out anytime they want to use it.

4

Use small pizza wheels and put 4 numbers on each with the clue to the answer on the back.



Use a large pizza wheel for the older kids with 0 to 10.



More Counting Activities

Use geoboards to help children count. They can make designs that are balanced by counting the same number one way as they went the other way.

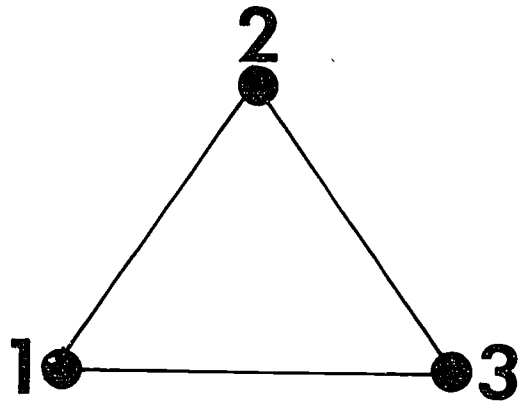
If you use scales and 1" cubes, the children can count out the right number and weigh them and then put the same number in the other tray.

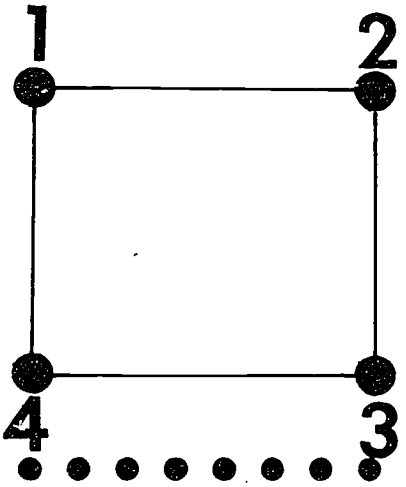
When cooking, be sure to use recipes and have the children count out the number of spoonfuls of vanilla necessary. Place the measuring utensils at the water table, and they will begin counting spoonfuls into containers.

Put a pocket chart out next to a number line and provide the children with number cards. They can put the number cards into the pocket chart in order according to the number line. Put a pack of set cards there, too, and they can put the sets in on top of the numbers.

Have children look for things that come in pairs. Sort the things out so that one of the pair goes in one box and the other thing of the pair goes into the other box. Dump one pile on the floor and keep the other box close by. The children can pick one out of the box and find the one in the pile that matches.

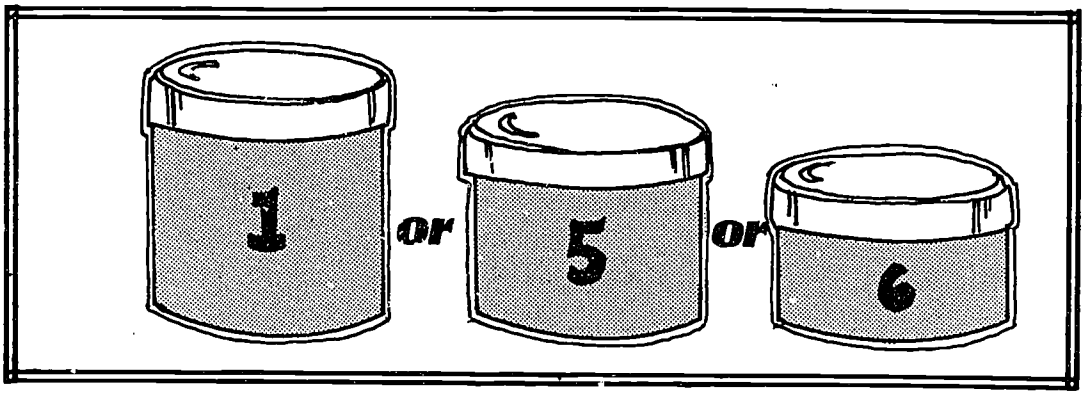
Use numbers to have the children follow directions. Use three dots to form a triangle and have them start at dot 1, go to dot 2, and then to dot 3 and back to dot 1—the beginnings of dot to dots.





COUNTING CANS

Get ten coffee or baby formula cans with lids on them. Cover each with construction paper or Con-Tact paper. Put a number on each of them, 1 to 10.



NUMBER HUNTS

Place several number cards about the room by cutting up construction paper in 2 x 2 inch squares and putting numbers on them, 1 to 10. Get about [illegible] of each number. Give each child a can and let him go and gather the numbers that match the number on his can.

Give each child newspaper ads along with his can. Let him go through the ads and locate the ones that have the number that matches the number on his can. Cut them out and place them in the can. You can later take these out and paste them on paper and use them for the Number Hunt discussed above.

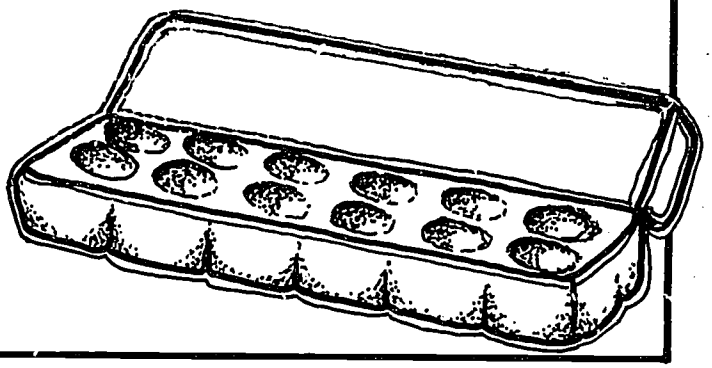
Containers for Counting

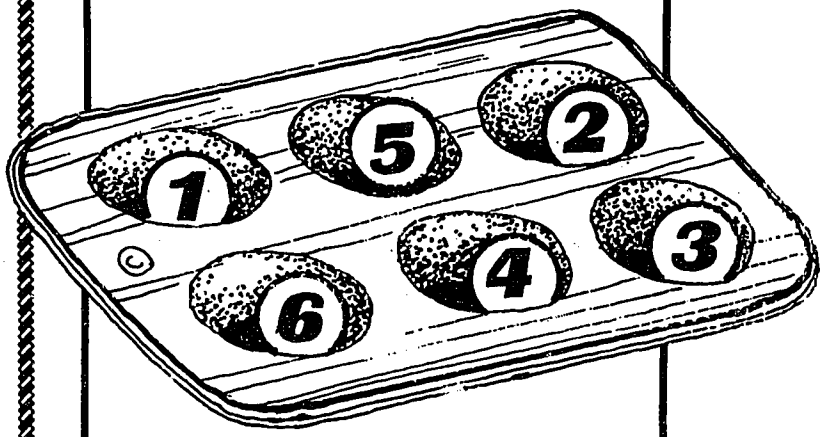
PRACTICE IN COUNTING

Children need a lot of practice counting things. You will need many things for them to count.

THINGS TO MAKE

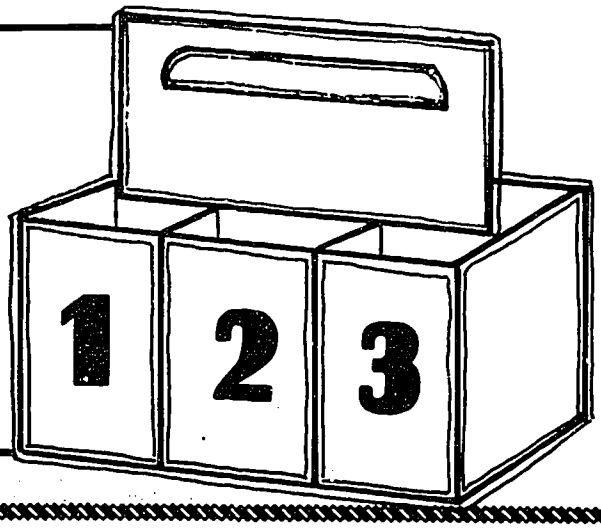
Take an egg carton and print a number in the bottom of each cup. For the young children use only 1 to 5, for the four-year-olds use 1 to 10 and for the five-year-olds use 1 to 12.





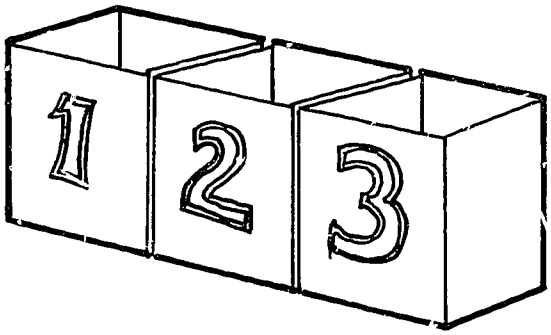
Buy a muffin tin at a garage sale and spray paint it a bright color. Place a circle with a number on it in the bottom of each cup. For the young kids use a six-muffin tin, and for the older ones use a twelve-muffin tin.

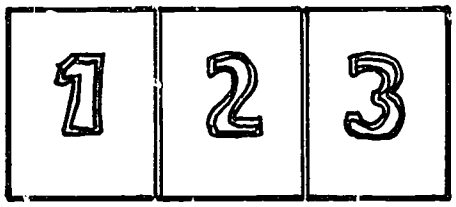
Take a pop bottle carton and cover it with construction paper. Place a number on the outside of each compartment. You can use numbers 1 to 6 for a six-pack or 1 to 3 on each side for the six-pack. You can use 1 to 8 on the eight-pack or use 1 to 4 on each side of the eight-pack.



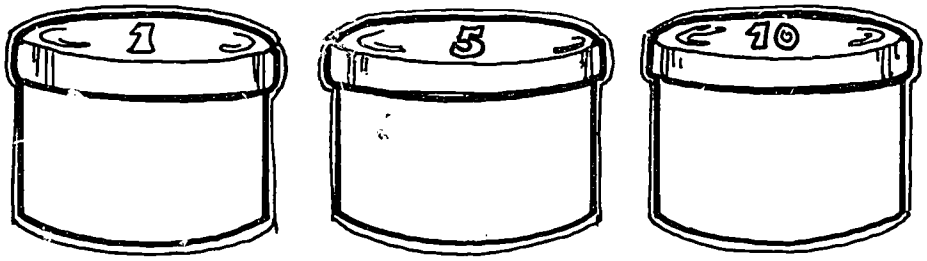
More Things to Make for Practice in Counting

Cut the tops off of a number of half-gallon milk cartons. Use however many you want. Cover them in some way to make them attractive. Staple them together. Put numbers on the outside of them as you did the pop bottle cartons or put numbers on the bottoms of the cartons.

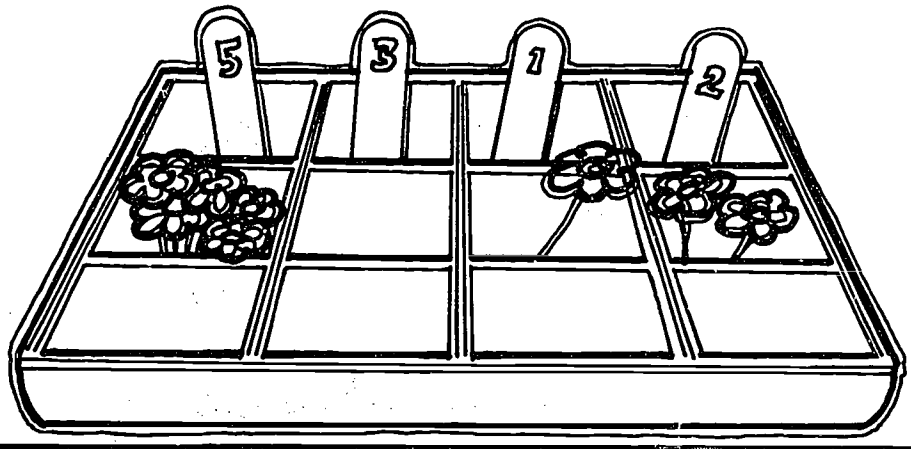




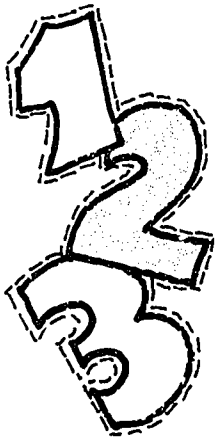
Collect several Heinz Instant Baby Food containers. Cover each of them to make them attractive. Save the lids. Put a number on each lid and then place that number of objects in the container. Place several of these in a shoe box. When children play with this set of counting objects, let them take the lids off, dump all the things in the containers into the shoe box and then count objects into the containers and put the right lid on.



Save your plastic potting flats in the spring when you go to buy flowers. They come in two or three sizes and are hooked together in numbers up to 48. Put Popsicle sticks in them to show the number of objects that are to go into those pots. Let the children make flowers and put them on Popsicle stems and load the flowerpots.

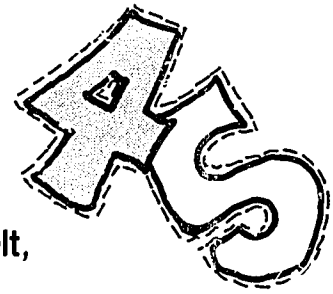


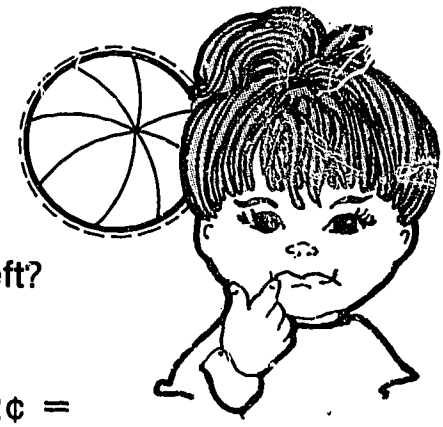
Using Money for Counting



Materials for Flannel Board

flannel numbers 0 to 10
(make two 5's)
flannel = and − signs
cents sign (¢)
picture of things kids like to buy backed with felt, Velcro or sandpaper
20 brown felt circles for pennies
* Each child should have 10 pennies so that he can work the problem himself.





Today we are going to buy things.

This is a ball and it will cost you 2 cents.

If you give me 2 cents, how much will you have left?
(Let them figure it out.)

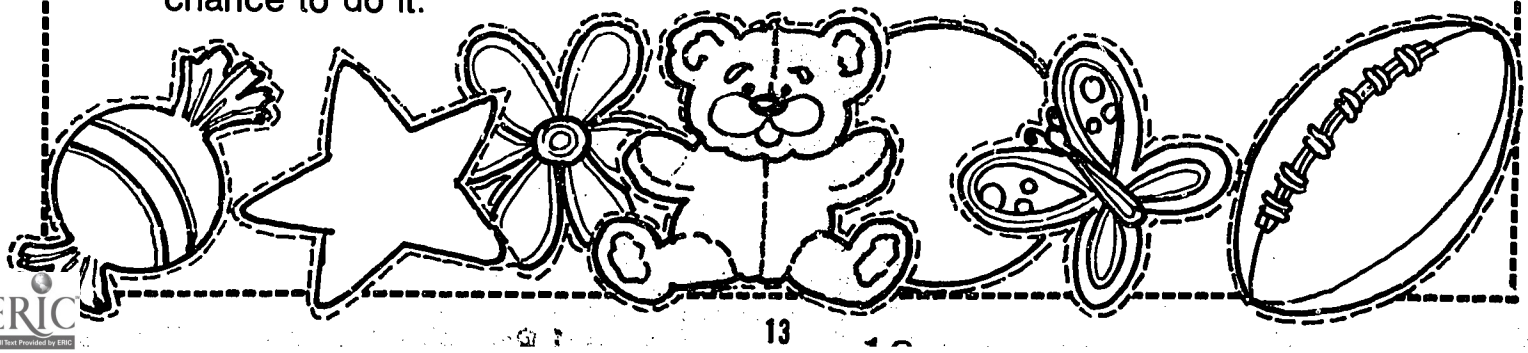
Put on the flannel board 10¢ − 2¢ =

or

and take away two of the pennies.

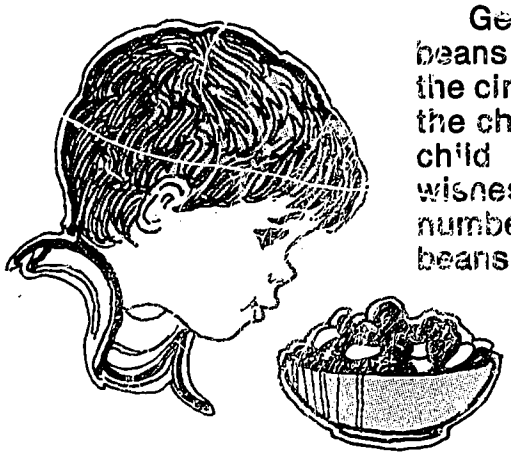
Ask: How many are left?
Say: Yes, because 10 take away 2 is 8
or
Yes, 10 minus 2 equals 8.

Try this same activity several times working with the equations of 10. The children know how it is to spend money although they don't often get a chance to do it.



JELLY BEANS IN A DISH

Teach the children: Jelly Beans, Jelly Beans
in a dish,
How many jelly beans
do you wish?



Get a small dish of jelly beans or counters. Go around the circle of children and chant the chant at each child. As the child tells you how many he wisnes, quickly count out that number and give the jelly beans to them and say:

Put them in the jar
It's not very far.
Count them with me
If you please.

Have all the children count and clap, too. The kids will get better at it as they do it a number of times. The counting of the beans as they **clink** in the jar will help them learn one-to-one correspondence.

Things to Use for Practice in Counting

Things you can purchase:
- Teddy bear counters
- Crystal octons
- Locktagons
- Structo
- Legos
- Wooden pegs
- Plastic beads
- Wooden beads
- 1-inch cubes
- Quiet counters (soft plastic)
- Plastic counters
- Cube-o-Gram

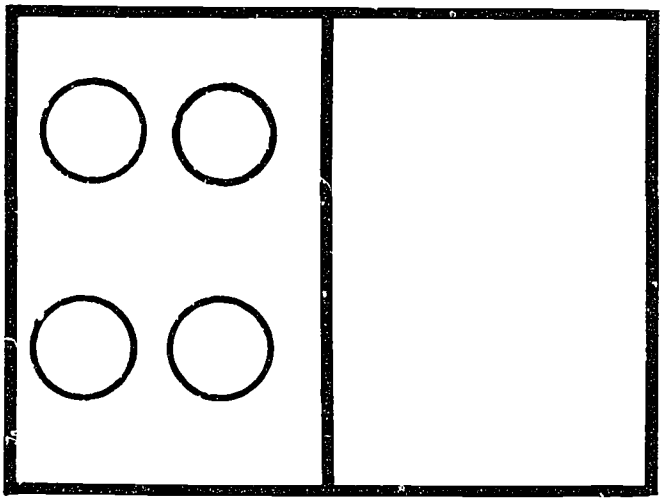
Things to collect:
- Rocks
- Shells
- Cotton balls
- Beans
- Tongue depressors
- Q-Tips
- Plastic spoons
- M & M's (Use once)
- Pop bottle tops
- Milk jug lids
- Erasers
- Lids

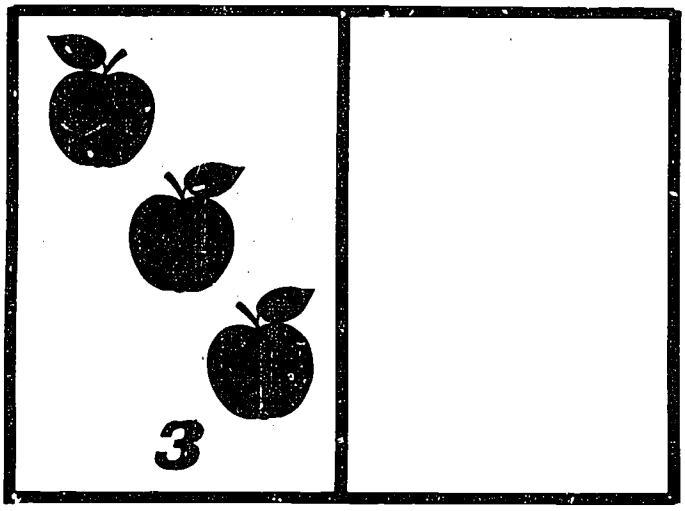
Folder Games

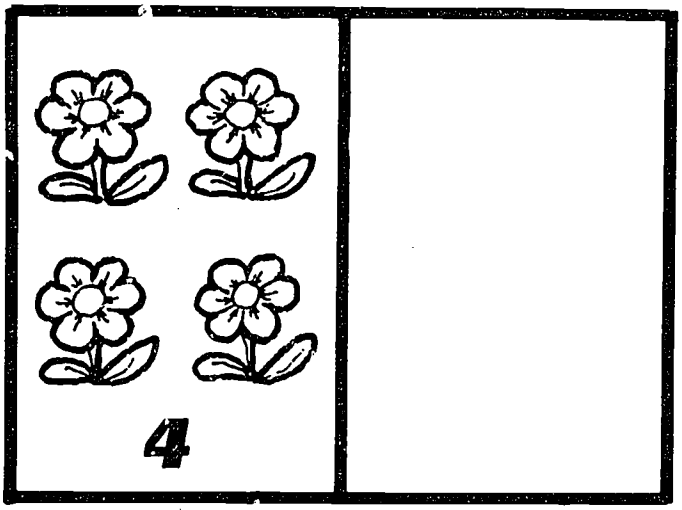
Children need to learn to visually recognize patterns for sets.

Use folders of various colors. If you don't want to use regular-sized folders for the little children, use a 9 x 12 sheet and fold it in half. Have the set on one half of the paper and the other half blank.

Give the children objects and let them try to make the same pattern on the right side that is on the left side.

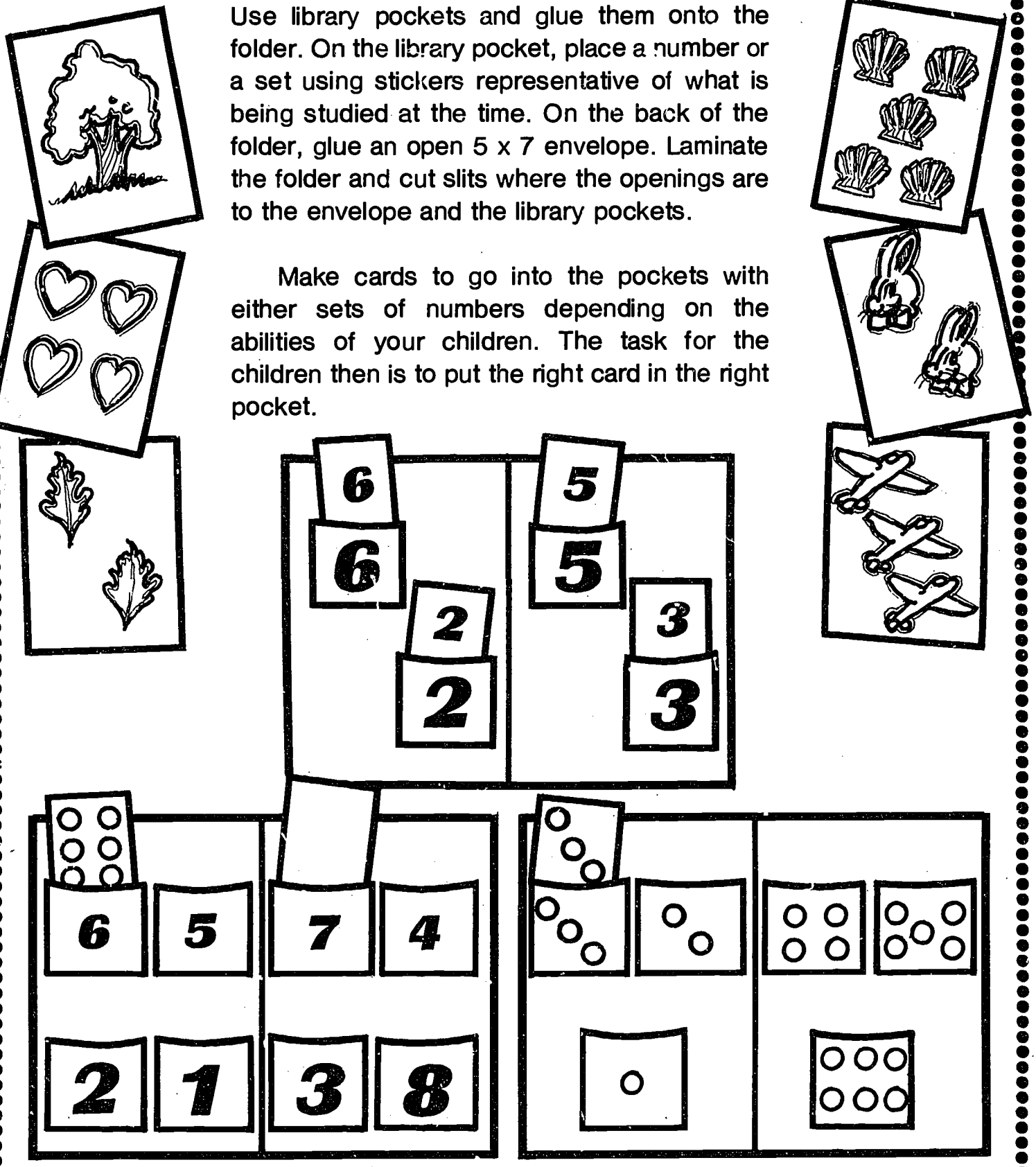






Other folder games are simple to make. Use library pockets and glue them onto the folder. On the library pocket, place a number or a set using stickers representative of what is being studied at the time. On the back of the folder, glue an open 5 x 7 envelope. Laminate the folder and cut slits where the openings are to the envelope and the library pockets.

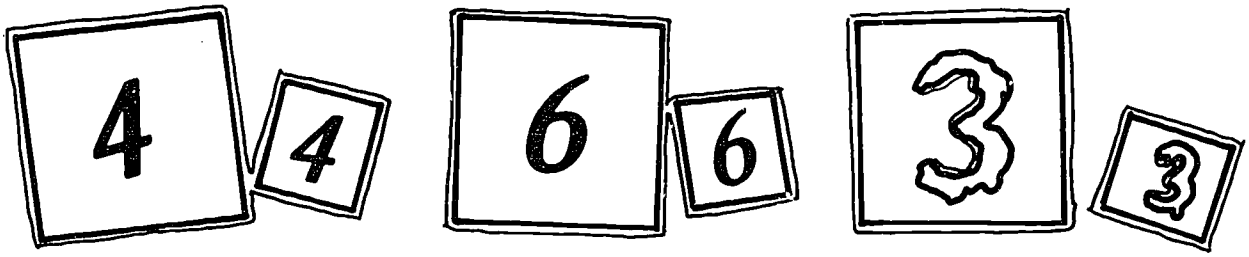
Make cards to go into the pockets with either sets of numbers depending on the abilities of your children. The task for the children then is to put the right card in the right pocket.



NUMBER CARDS

Make several sets of number cards for use in the room. Each should be on a 6 x 6 inch square of oaktag. You can have matching ones on 3 x 3 inch oaktag. Let parents help.

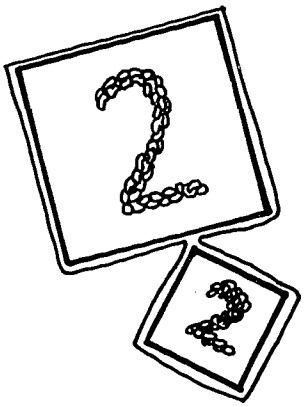
Make one set of each with plain black numbers.



Make one set of each out of sandpaper.

Make one set of each by allowing a stream of Elmer's glue to make the number. Allow this to dry and it will give a raised number.

Make one set of each by gluing beans, rice, sand, or salt to the cards.



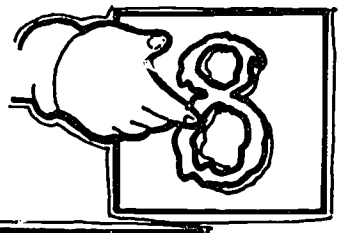
Put the cards in the math area where the children can get them out to use.

Use them as guides on number hunts or to hide for the number hunt.

ACTIVITIES

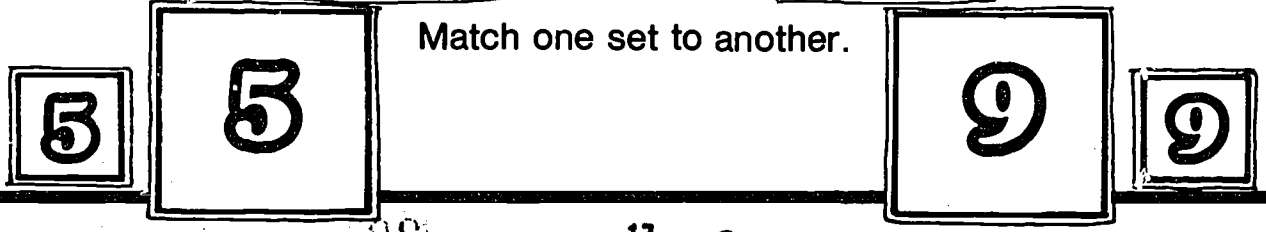
(Model each activity for the children or do it during circle time first. The children will then be able to practice at center time by themselves.)

Trace the number with the fingers.



Make rubbings of numbers.

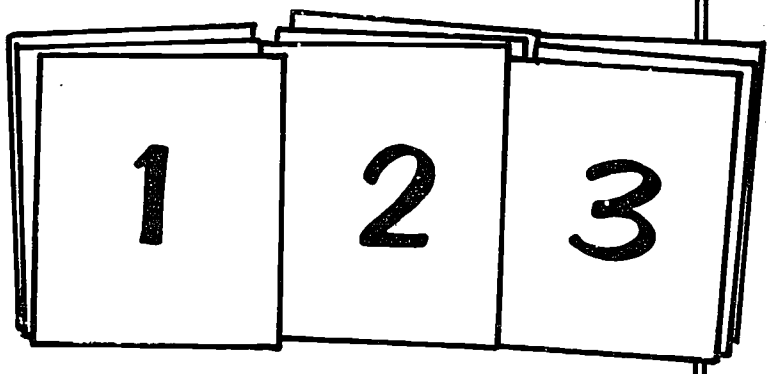
Match one set to another.



Card Games

For Three-Year-Olds

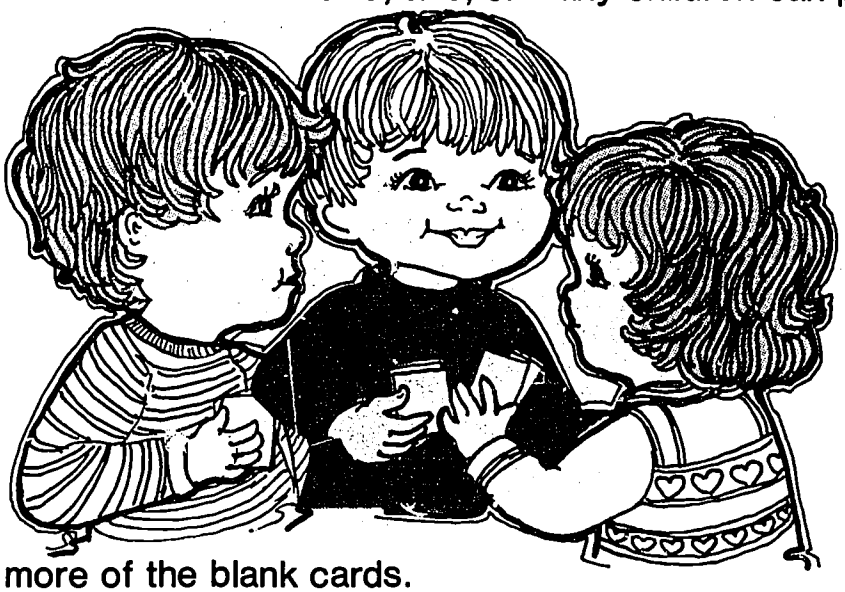
Cut a set of 2½ inch by 4 inch pieces of oaktag to make the cards on or buy a set of blank cards.



Take 20 of the cards.

Make 4 cards of the number 1.
Make 4 cards of the number 2.
Make 4 cards of the number 3.
Make 4 cards of the number 4.
Make 4 cards of the number 5.

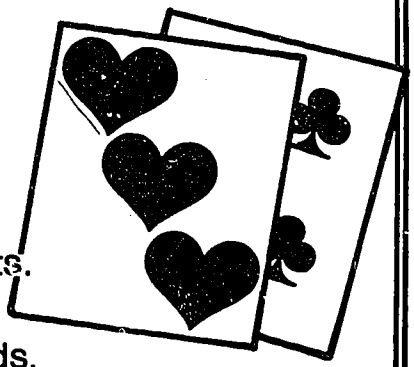
Let the children play Number Concentration. Place all the cards face down on the table, floor, or carpet square. Let one child turn over 2 cards to see if they are the same. If they are, the child can keep them. If not, the child turns them back over. One, two, or many children can play this game.



Take 20 more of the blank cards.

Make 4 with a set of one thing. (Use stickers that are appropriate to the season.)

Make 4 with a set of two things.
Make 4 with a set of three things.
Make 4 with a set of four things.
Make 4 with a set of five things.



Have the children use the cards to find matching sets.

Let the children play Set Concentration with the cards.

More Card Games

For Four-Year-Olds

See the directions for making cards on the previous page. Use the same size cards.

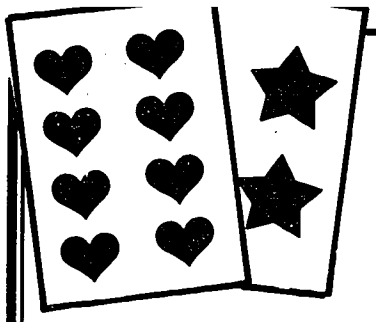
Take 20 of the cards.
Make 2 of the number 1.
Make 2 of the numbers 2-10.

Let the children play Number Concentration. See the directions on the previous page.

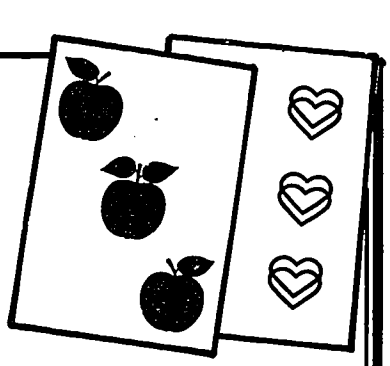
Let the children play Number Fish. Pass out four cards to each of two players. Place all the other cards in an area close to the children and scatter them out face down. This is the fish pond. Let the children hold the cards in their hands. The object of the game is to get pairs of matching numbers. Have the first child ask the second if he has one of the cards he needs to make a pair with one card that he has in his hand. If the child doesn't have one, the child says, "Go fish." The child then takes a card from the fish pond. If it matches, the card is put with the one in the hand for a match and placed in front of the child. The child then gets another turn. If the card doesn't match, the turn goes to the other child.

Take 20 of the cards.
Make 2 of the set 1.
Make 2 of the set 2.
Make 2 of the sets 3 through 10.

Have the children play the above games with these cards.



And Still More Card Games



For Five-Year-Olds

Get 42 of the cards that are described on the previous pages.

Make 2 of the number 0.
Make 2 of the number 1.
Make 2 of the numbers 2-20.

Let the children play Number Concentration.

Let the children play Number Fish.

A new game you might try is Zero Slap. Deal out all the cards to the children who are going to play. Each child places the cards in a pile in front of him and leaves them face down.

The one to the left of the dealer turns one card over in central location in the center of the players. The next child turns a card over on top of that one. If the two cards are the same number, then the children slap it. The first one to get it picks up the stack and places those cards at the bottom of his own stack. If the card is a *zero*, the cards are also slapped. The game goes on for a long time or until one child has all of the cards.

Take 44 cards.

Make 2 with a zero.

Leave 2 blank.

Make 2 with numbers 1 to 10.

Make 2 with sets 1 to 10.

Let the children play any of the games they have already learned with this set of cards.

To keep the cards separate, make them with different colors of poster board, or put stickers on the backs of the blank cards.

Teacher-Made Number Matchups

There are several things you can make to help your children learn their numbers and to count. They will take some of your time, about $1.00 of your money and give the children lots of practice.

The things that follow are for you to make sets of and have the children put together to match.

Remember that when you make things for your children, you must make them to fit the skills of your children.

Remember what numbers to use with which groups. Use them until they have mastered the simpler ones.

First use only 1 to 5 (or 0 to 5);
then you use 1 to 10 (or 0 to 10).
Next you can use 1 to 20 (or 0 to 20),
and for the older or wiser, 10 to 20.

You can make the matchups with the following sets:

Number on one piece	Number on the other piece
Set on one piece	Set on the other piece
Number on one piece	Set on the other piece
Number word on one piece	Number word on the other
Number on one piece	Number word on the other
Set on one piece	Number word on the other

NUMBER MATCHUPS

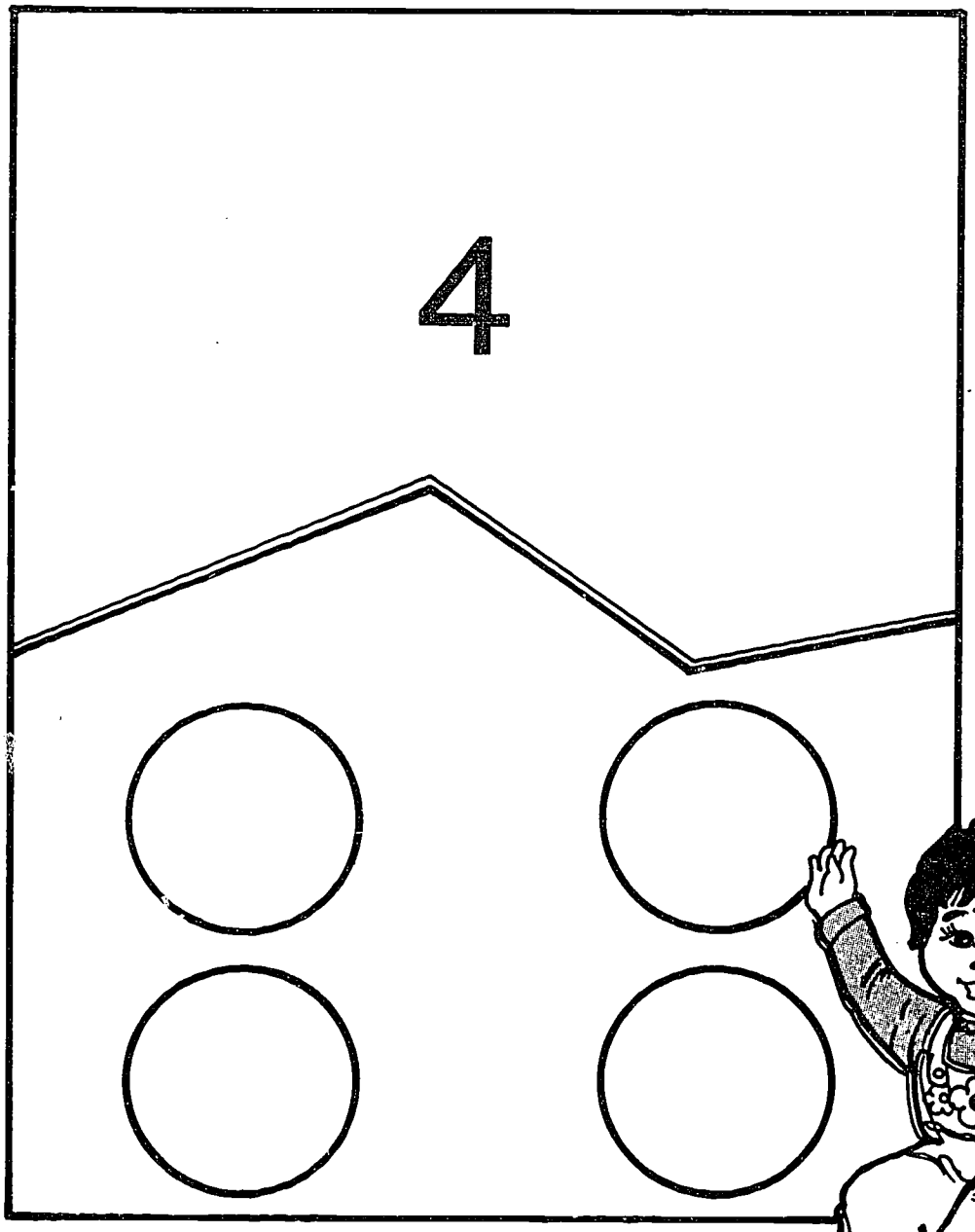
Make a set of these for numbers 1-5 (3's)

or 1-10 (4's)

or 1-20 (5's)

Objective: Count and find numbers.

Make all cuts different.



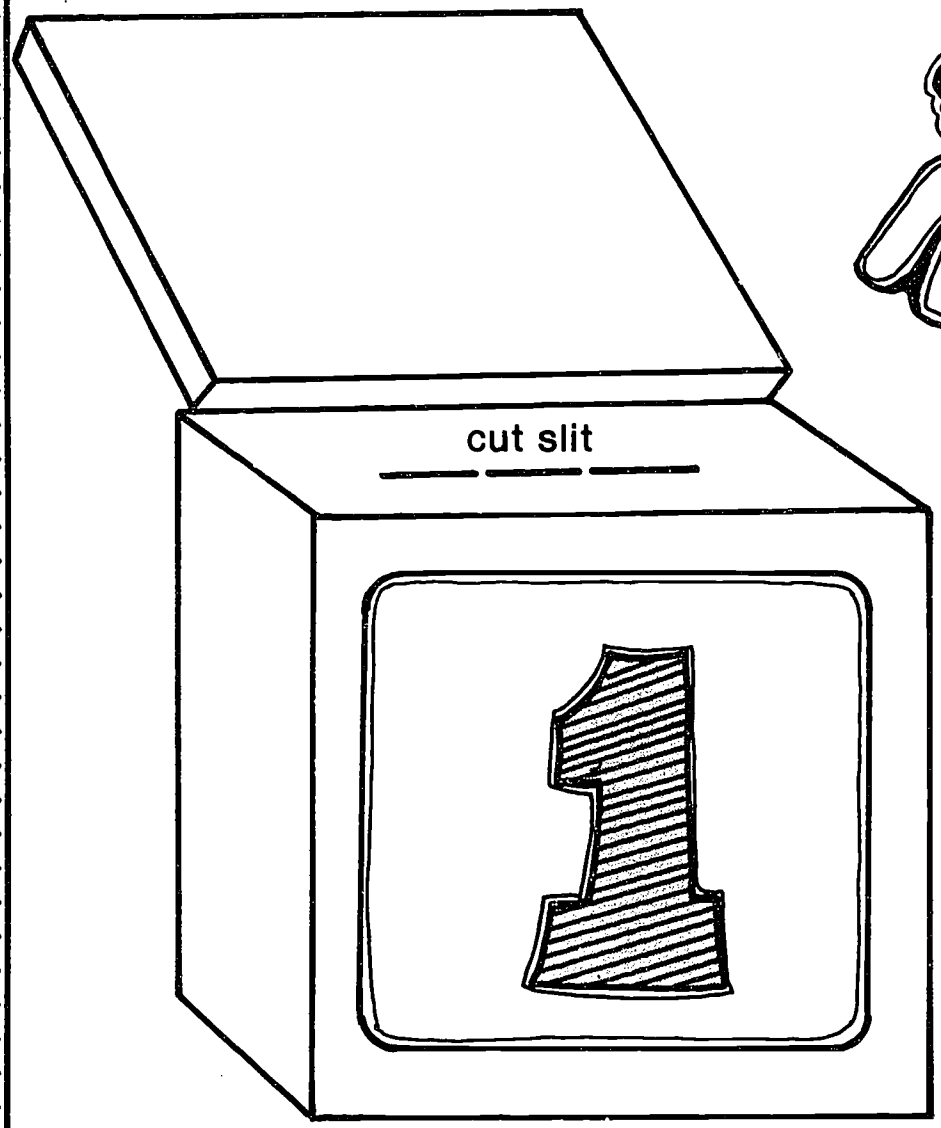
NUMBER MATCHUPS

Make a set of these for numbers 1-5 (3's)

or 1-10 (4's)

or 1-20 (5's)

Objective: Match numbers.



Jack-in-the-box

Problem Solving

In order that math can become relevant in the environment, one of the things that teachers must do is use it in ways other than skills teaching, memory, repetition. There are some fun ways to do this, and you can use them frequently in the classroom.

- Each day when you count the number of children who are present, first let the children guess how many they think there are.

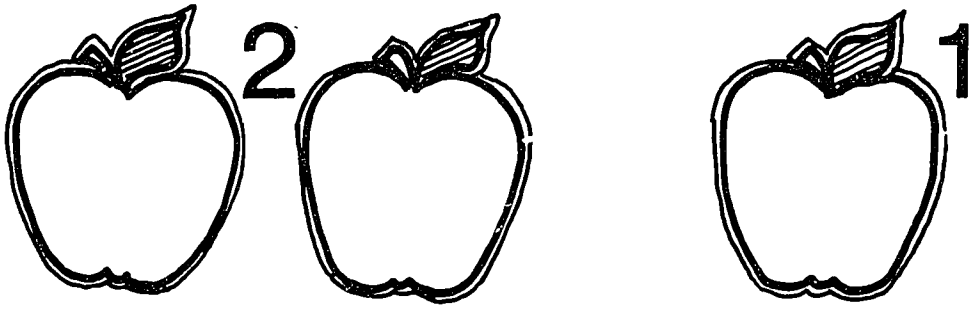
- During the counting time, but before the counting begins, let the children guess how many people they think are absent.

- After you have counted and come up with the number of children that are present, ask the children if they can figure out how many are gone. Follow that up with if Molly were here, how many would we have? If you want to go further, ask if Molly and Michael were gone, how many would be here?

- Have the children pick up the number of napkins, cartons of milk, spoons, crackers, etc., they think they will need for the people at their table.

- Tell the children they will need 1 box of crayons for each person at their table and ask them how many boxes they think they will need.

- When you talk about numbers, have a flannel board handy and place the numbers on the board as you talk to show that the numbers have meaning and that they are relevant. For example: If I have 2 apples and you have 1, how many would we have all together?



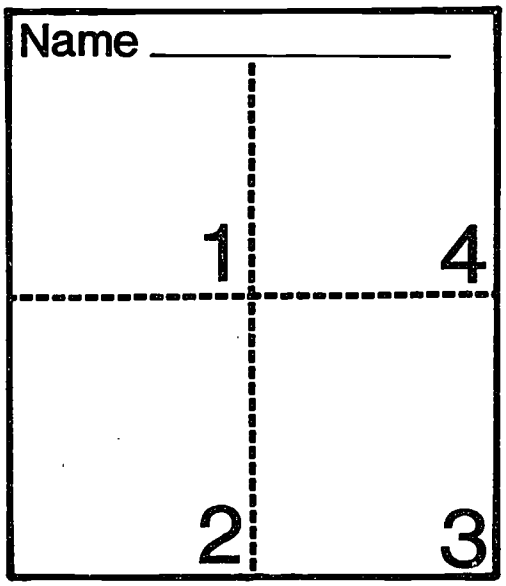
- Provide the children with manipulatives to figure out the solutions for themselves.

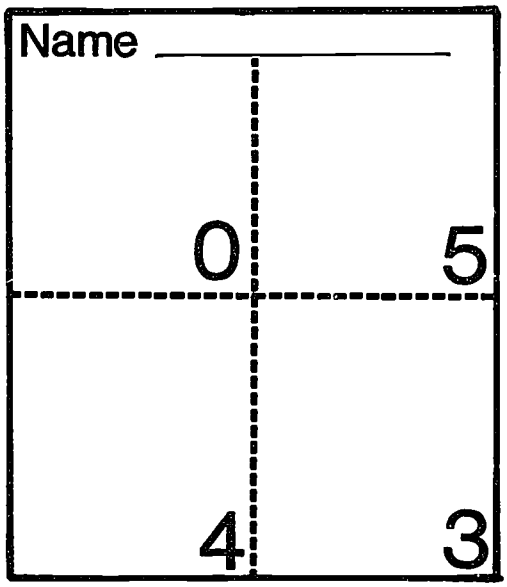
Think-and-Do Sheets

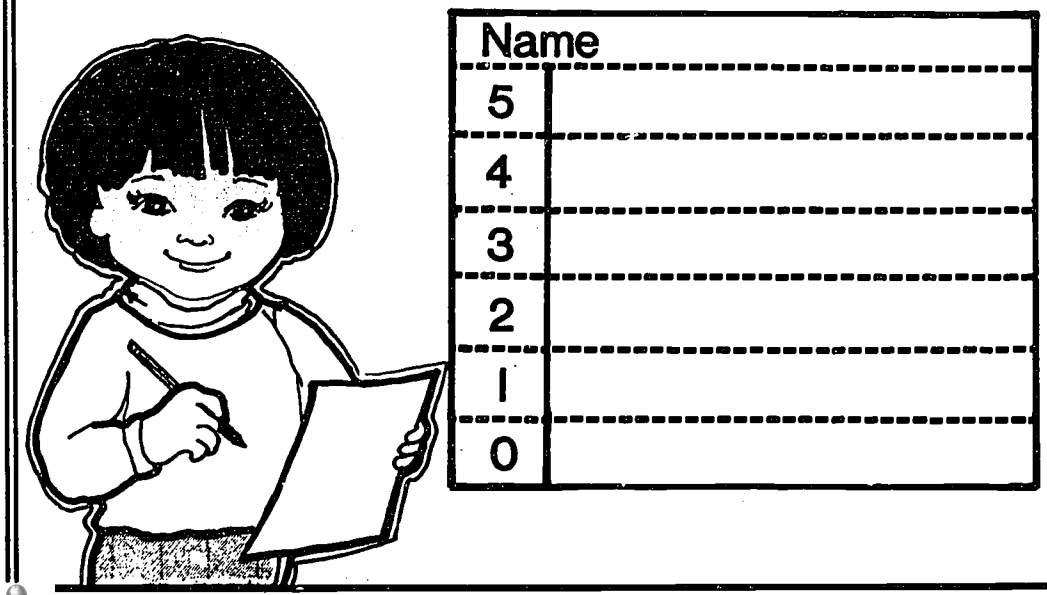
Fold a blank piece of paper so that there are boxes as shown.

Instruct the children to draw as many objects either in the box or in the row as the number in the box represents.

Write only numbers in the boxes that you know the children can do. You will know what ones they can do by having provided many activities for them to do over a long period of time and by observing how and what they can do.







Testing Sheets

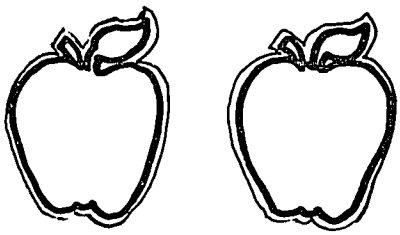
You need to remember that young children do not learn as well using dittos and paper-pencil tasks as they do when they are manipulating the materials; therefore DO **NOT** USE DITTO SHEETS WHEN **TEACHING** YOUNG CHILDREN.

The following sheets are for **testing** to see whether or not children have the concepts of counting and number recognition. You should use them only after the children know how to count objects. You should use them only as training for future paper-pencil testing.

Name _____

Count the objects in the box and put a ring around the correct number.

2 1 3

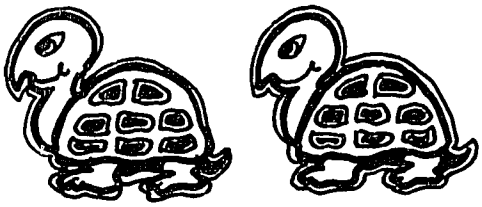


3 2 1

3 2 1

1 2 3

1 3 2



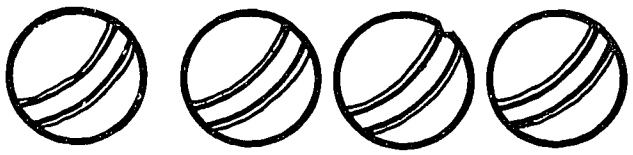
2 3 1

1 2 3

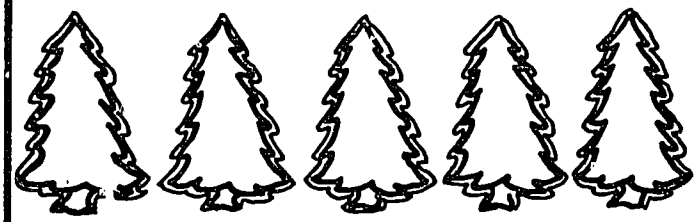
1 2 3

Name _____

Count the objects in the box and put a ring around the correct number.



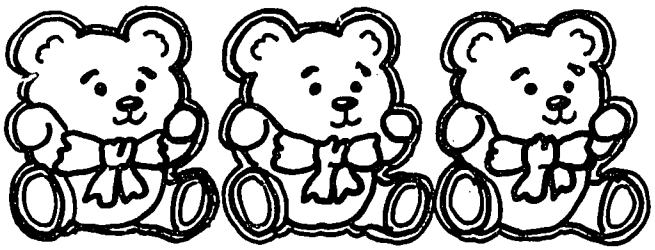
0 4 3



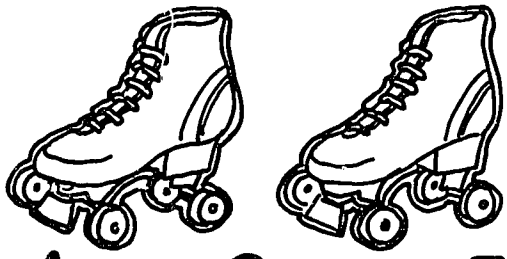
2 3 5

4 5 1

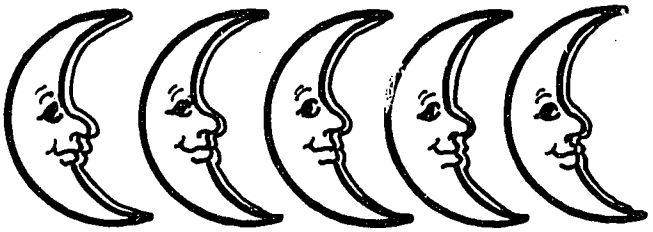
0 2 4



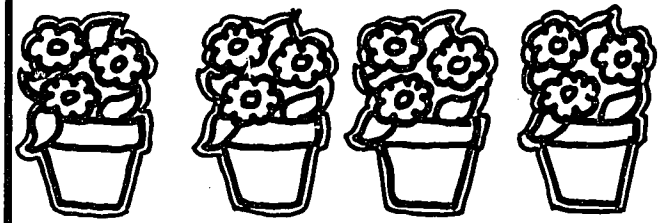
5 3 1



1 2 5



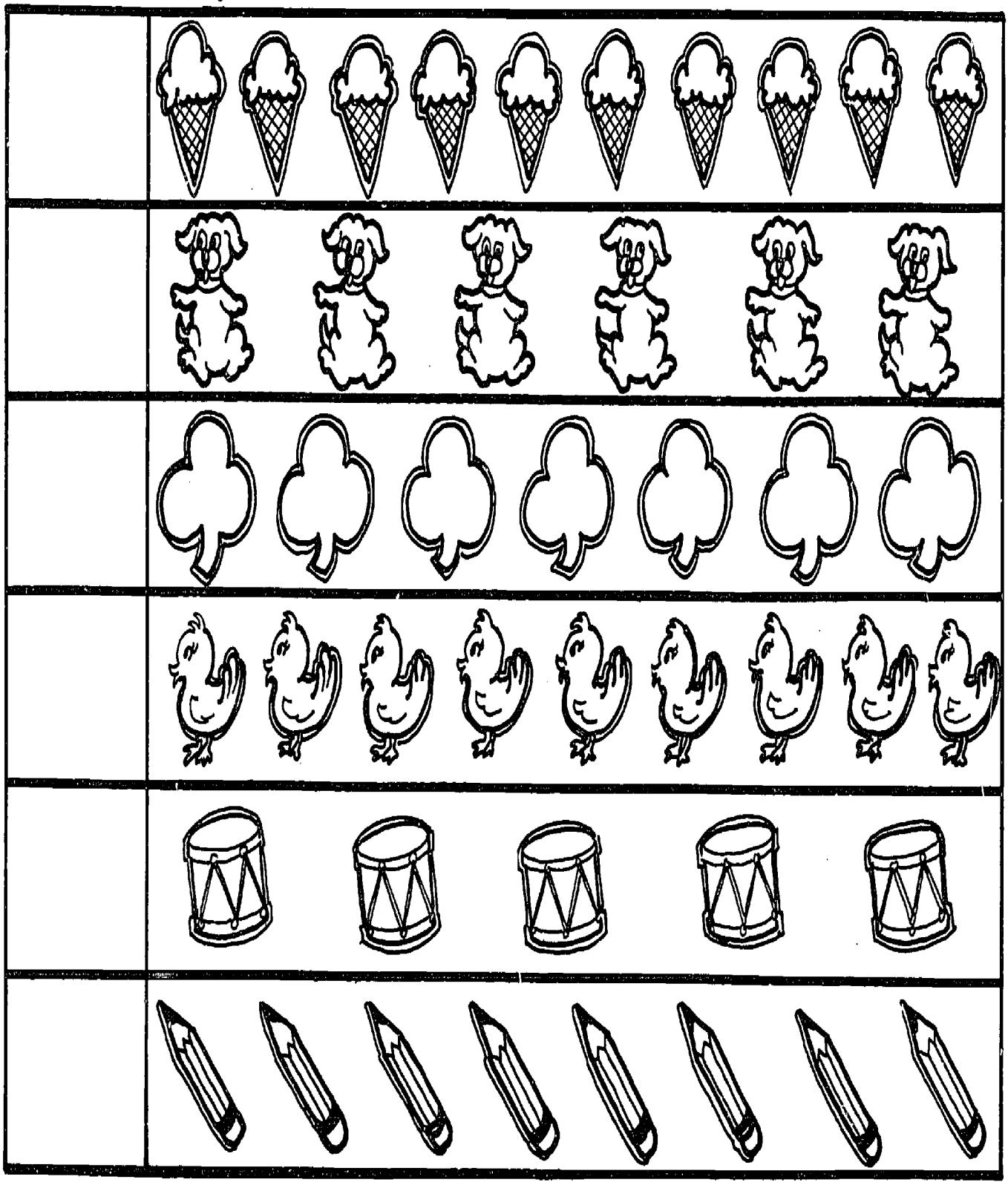
5 3 2



2 4 5

Name _____

Count the number of objects in the row and put the number in the box at the left.



Extending Activities

Some children may finish with their number, measurement, geometric objectives, and you then wonder what to do with them. This section will give you some suggestions for those children on the top rungs of the ladder.

NUMBER POCKET CHARTS

Use a pocket chart and make sure there are enough pockets to reach 100.

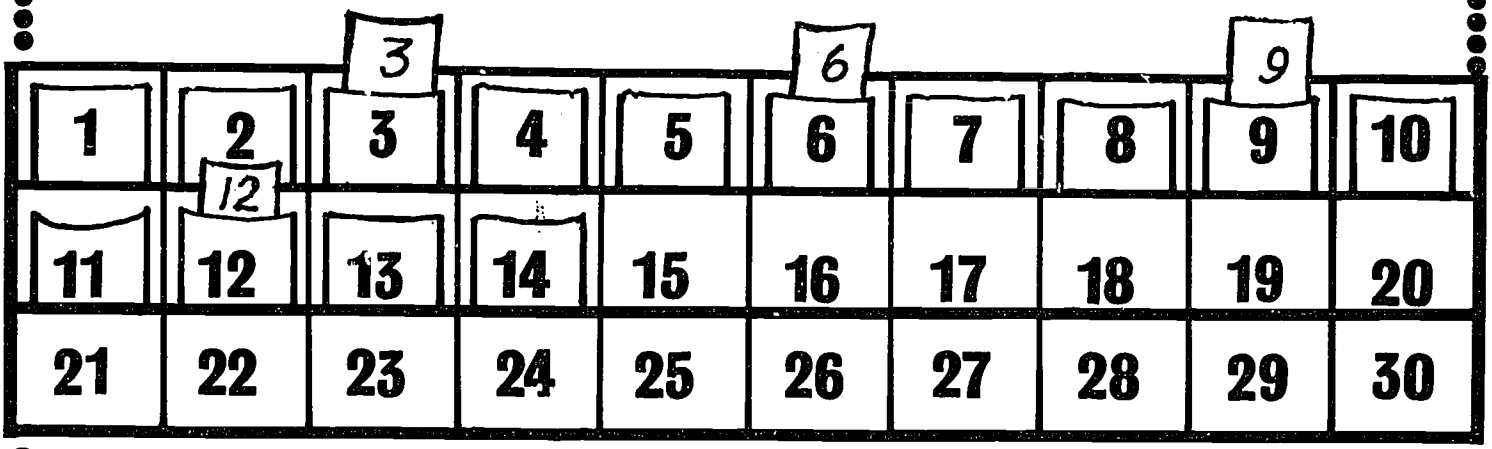
Have the children put number cards into the pockets in order 1 to 100.

Have the children take out every other number starting with the number 1 and write the numbers that are left on 1" ruled paper.

Have the children put number cards into the pockets in order 1 to 30.

Have the children take out two numbers starting with number 1, leave a number, take out two, leave one, etc., (counting by 3's).

Have them write the numbers that are left on the ruled paper.



Set up patterns for counting by 4's, 5's, 6's, 7's, etc.

Counting by	Numbers for chart	Pattern of removal
4's	1-40	take out 3, leave 1
5's	1-50	take out 4, leave 1
6's	1-60	take out 5, leave 1
7's	1-70	take out 6, leave 1
8's	1-80	take out 7, leave 1
9's	1-90	take out 8, leave 1
10's	1-100	take out 9, leave 1

HOW CAN YOU MAKE 9?

Give the children 9 (or any number) of beads, blocks, buttons. Ask them to split them into 2 groups with their 2 hands so that some beads are in or under 1 hand and the rest are in or under the other hand. Ask them to count the number in the first hand and record that number on a piece of paper. Count the number in the second hand and record that to make an addition equation.

$$6 + 3 = 9$$

Tell them today that they are to do this as many times as they have time to do it to see how many different equations they come up with. After they have done a few, ask if they have any equations that are the same. If so, mark those out. Try for new equations each time.

DAY TWO, SAME 9 BEADS

Have the children each count to see that they have the right number of beads. Today's process will be a bit different. Select a few beads and remove them from the group and put them under a sheet of paper. Write this equation on the board.

$$9 - \_\_\_\_ =$$

Have the children count the number of beads that they removed from the original group and place in the space where the underlining occurs. If they are sophisticated enough have them guess what number goes at the end and compare it with the number of beads under the paper. If they are not, have them count the number of beads under the paper and put it where the answer belongs.

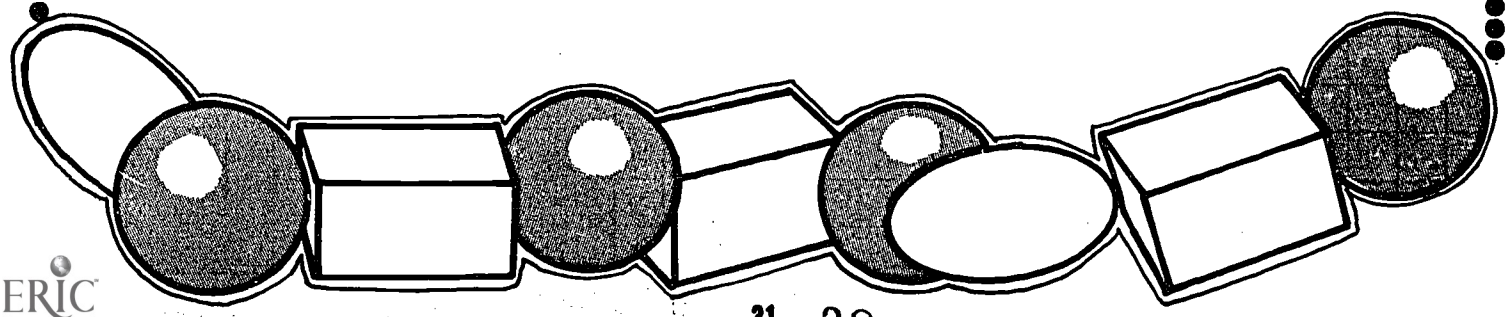
DAY THREE, SAME 9 BEADS

Have the same setup as yesterday. Only the process will change. Same 9 beads. Same equation:

$$9 - \_\_\_\_\_ =$$

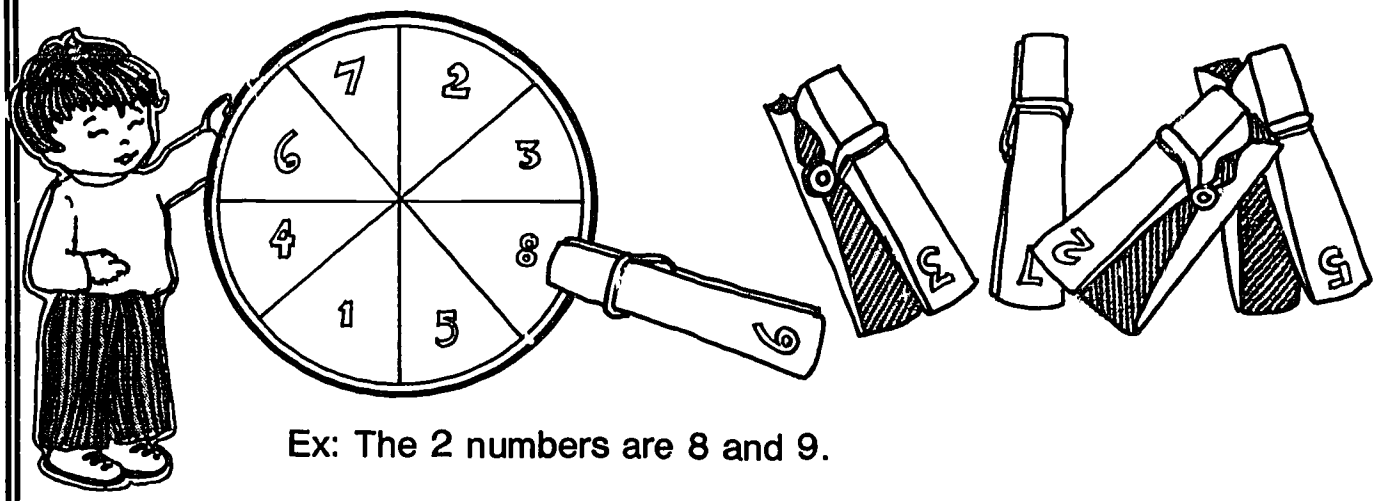
Today have the children take some beads and put them under the paper and leave the others in the original pile. First count the ones under the paper and put in the underlined space and the ones in the original pile will be the answer.

THEY MIGHT MAKE A FUN DISCOVERY.



NUMBER WHEELS

Make a series of number wheels and on the front place a number and on the back only the pie shape. Make a set of clothespins with numbers on them. Let the children put 9 clothespins onto the number wheel from the back and then turn it over to see what 2 numbers they have put together. They can then write equations.



Ex: The 2 numbers are 8 and 9.

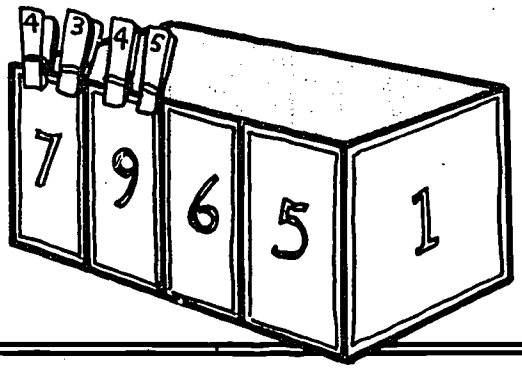
Today they can write addition equations: 8 + 9 = 17.

Another day, subtraction equations: 9 − 8 = 1.

If mature enough, multiplication equations: 8 × 9 = 72.

NUMBER BOXES

On the outside of a shoe box, draw lines from the top to the bottom of the box. Place answers to problems in these segments. Number a bunch of clothespins and put them in the box. The child must then put the 2 clothespins along the top of the box that make the equation. For checking you can have them write all of the equations on a sheet of paper.



Materials That You Can Purchase

Montessori Materials

- Number Kit
- Spindle Boxes
- Cards and Counters
- Short Bead Stair
- Number Rods and Numerals
- Number Sorter

Other Materials

- Cuisenaire Rods
- Giant Cuisenaire Rods
- Number Blocks
- Proportional Number Blocks
- Matchmates
- Tactile Number Board
- Number Lines
- Place Value Sticks
- Counting Frames
- Modern Computing Abacus
- Math Balance
- Wooden Number Blocks
- Bead Stacker
- Color Shape Abacus Set with Boards
- Chutes and Ladders
- Toy Phones

Unifix Materials

- 10 by 10 Number Tray
- My First Unifix Counting Book
- Unifix Operational Grid and Tray
- Value Cards
- Number Indicators
- Pattern-building Underlay Cards
- 100 Number Tiles
- Basic Mathematics Kit

Materials for Clocks

- Clock Dial
- Clock Face Rubber Stamp
- Original Judy Clock
- Mini Judy Clocks
- Tell Time Quizmo

Materials for Fractions

- Apple Fractions
- Fraction Disks
- Fractions Are Easy as Pie

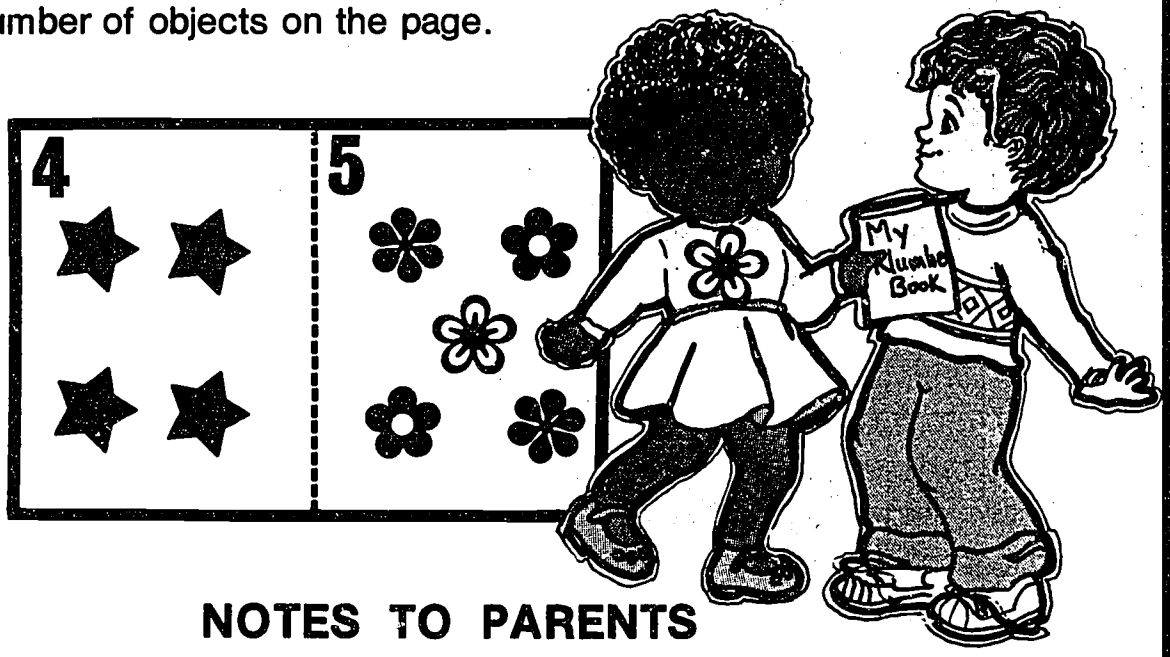
Keeping Parents Informed

NUMBER BOOKS

Let the children make their own number books to take home. There are several ways to do this and here are two.

1. Staple several sheets of paper together and put a number 4 on the front. (Change the number if you aren't studying the number 4.) Let the child draw 4 of anything he wishes on each page and if he can, put the number at the bottom of each page.

2. Staple five sheets of paper together and put MY NUMBER BOOK on the front. Let the child write one number on each page if he can. If he cannot, you can do it for him. Use numbers 1 to 5 for starters. On each page he can draw the correct number of things or use stickers to put the correct number of objects on the page.



NOTES TO PARENTS

Send notes home to parents frequently to keep them aware of what the class is doing, as well as what their individual child can do.

If you are studying one number a week, send that number home on the first day of the week and let the children tell their parents what number it is. On the back of this number, write a note to the parents suggesting ways they can help their children learn that number by counting things at home or looking for that number in the newspaper ads, on television, on street signs, on houses, on car licenses, in the grocery stores, etc.

Selecting Number Books

There are quiet a few things you must consider when selecting number books to read to young children when you are using them to reinforce math skills. Many books use numbers and counting skills that are appropriate to older children and not to younger ones. Be careful and follow these guidelines which were suggested in an article in *Young Children* by Hosticka, Ballenger, and Benham.

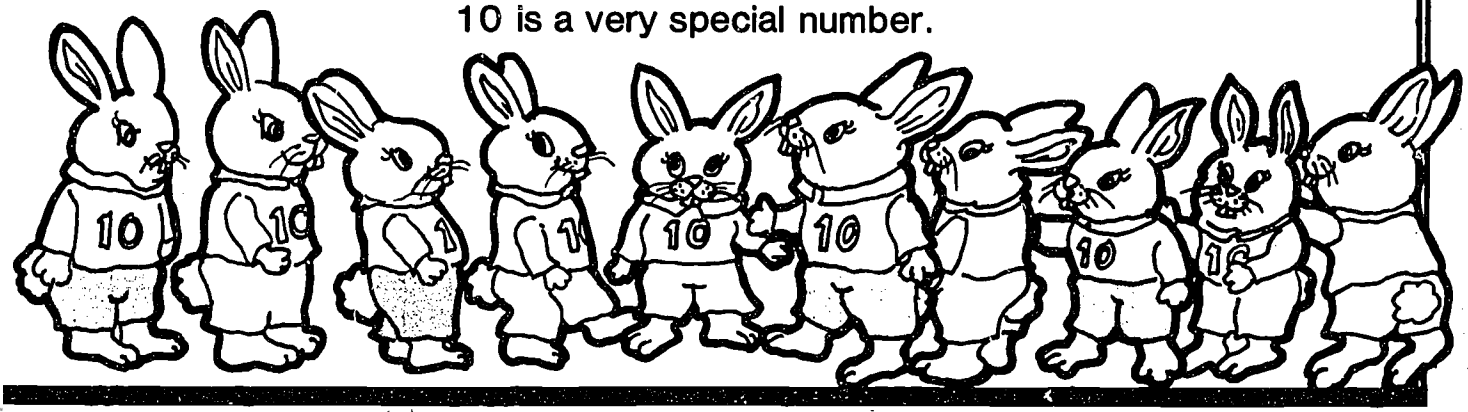
- Make sure that the numerals 1, 2, 3, etc., always refer to how many and are not used as signs, symbols, and designs.
- Make sure that the number words *one*, *two*, *three*, etc., always refer to how many.
- Be sure that the illustrations show the number of objects that the number or number word suggests.
- Be sure that the story line or written word clearly defines the objects in the set being counted.

If you are looking at books that are talking about ordinal positions (first, second, third, etc.), make sure of the following things:

- When referring to the ordinal position, make sure that the starting position is indicated.
- Terms like *first*, *second*, and *third* are used to note position, not *one*, *two*, *three*.
- When the numbers are used for ordinal position, they should be 1st, 2nd, 3rd.

IN ALL INSTANCES MAKE SURE THAT WHEN THE BOOK GOES PAST 10 THAT THE ILLUSTRATION SHOWS A GROUP OF 10 PLUS THE LEFT-OVERS.

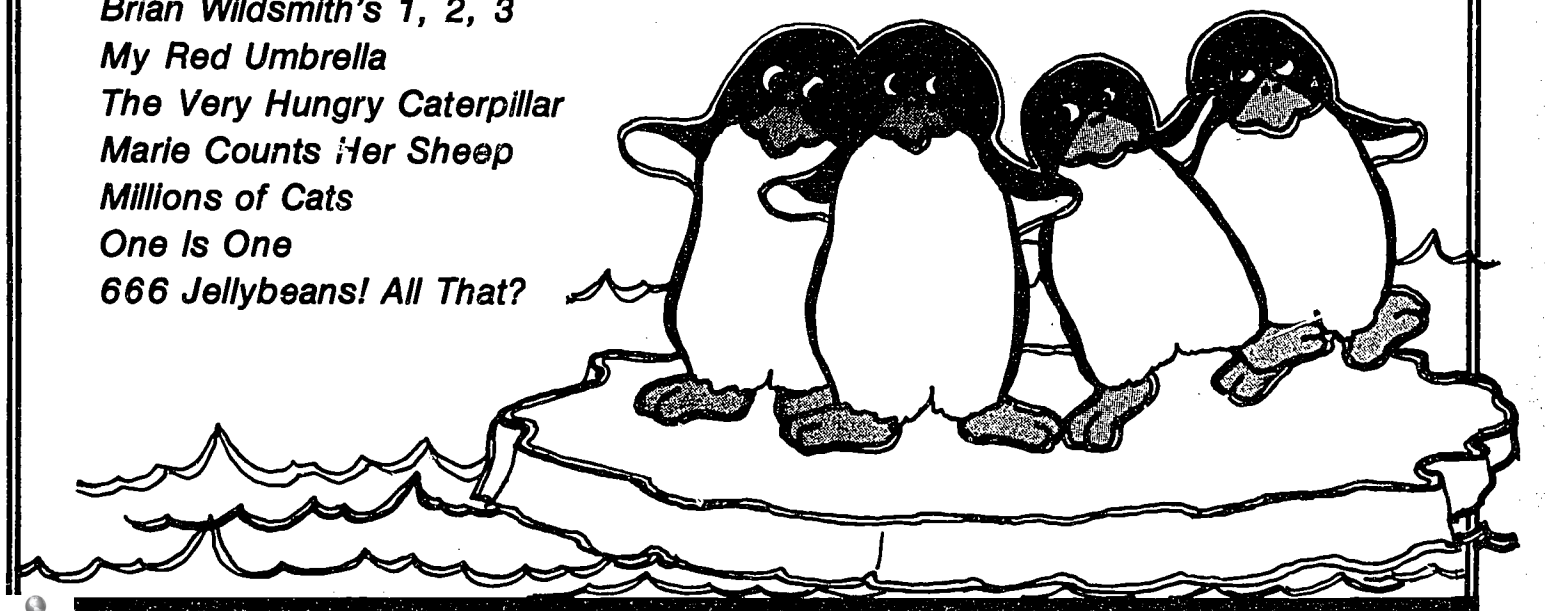
10 is a very special number.



Number Stories and Books

"The Three Bears"
"The Three Billy Goats Gruff"
"Snow White and the Seven Dwarfs"
"The Three Little Pigs"

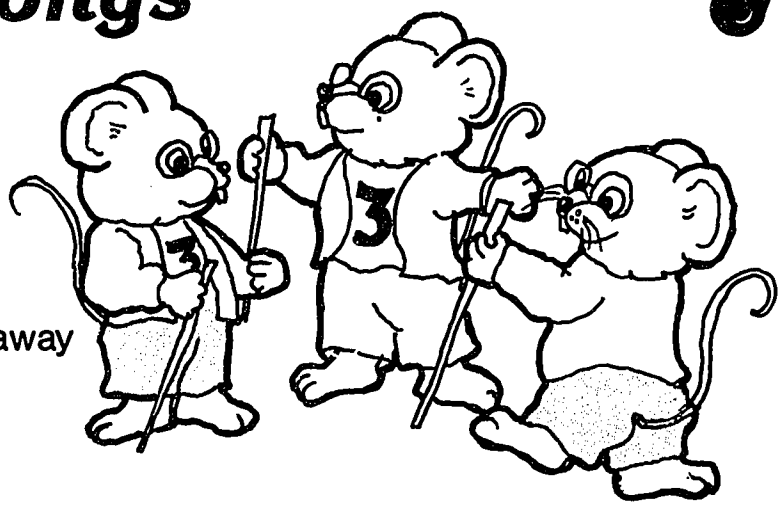
Number Men by Louise True
Count and See by Tana Hoban
Numbers by John Reiss
One Dancing Drum by Kredenser and Mack
Beginning to Learn About Numbers by Richard Allington
Let's Count by Adelaide Holl
Ten, Nine, Eight by Molly Bang
Anno's Counting by Mitsumasa Anno
Counting Penguins Zero to Nine by Caroline Howe
Bears on Wheels by Stan and Jan Berenstain
One Snail & Me
Brown Cow Farm
Brian Wildsmith's 1, 2, 3
My Red Umbrella
The Very Hungry Caterpillar
Marie Counts Her Sheep
Millions of Cats
One Is One
666 Jellybeans! All That?



Number Songs

"Three Blind Mice"
"This Old Man"
"Ten Little Indians"
"When Barnacle Bill Was One"
"Three Blue Pigeons"

Three blue pigeons
Sitting on the wall
Three blue pigeons
Sitting on the wall.
Oh look, one has flown away
What a shame.
Two blue pigeons,
Sitting on the wall,
Etc.



"Five Little Jack-O-Lanterns"
"Five Little Ducks"

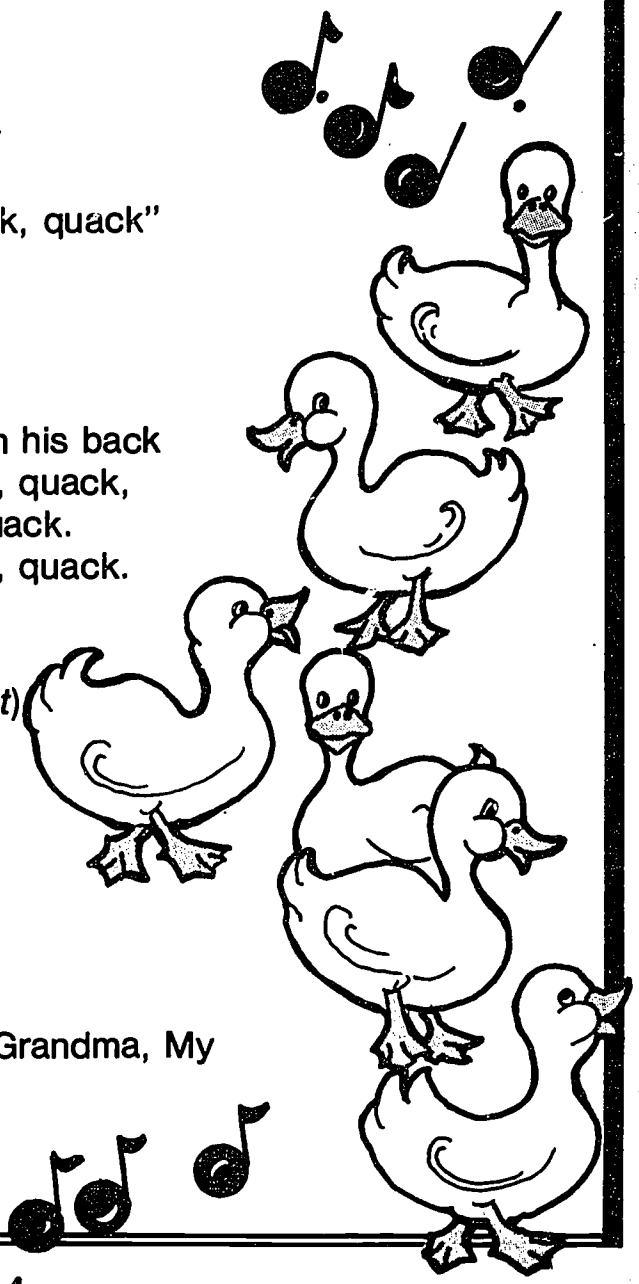
Five little ducks went swimming one day
Over the hills and far away
Mother Duck said, "Quack, quack, quack, quack"
But only four little ducks came back.

"Six Little Ducks"

Six little ducks that I once knew
Fat ones, skinny ones, fair ones, too.
But the one little duck with the feather in his back
He led the others with his quack, quack, quack,
Quack, quack, quack. Quack, quack, quack.
He led the others with his quack, quack, quack.

"I Have Two Eyes" (*Sesame Street*)
"Johnny Pounds with One Hammer"
"I Have Five People in My Family" (*Sesame Street*)
The *Numbers*! album from *Sesame Street*

"Just One Me"
"One and One Make Two"
"Knock Three Times"
"Four"
"Think of Your Fingers"
"Six"
"My Sister, My Father, My Mother, My Grandma, My Grandpa, My Dog, and Me"
"Eight Beautiful Notes"
"Climbing Nine Stairs"
"Ten Cookies"



Nursery Numbers

One of the ways that the children will learn that they know numbers and understand a little about them is to hear them used in nursery rhymes and other poems and finger plays. Some of them are printed here for your use. Others are listed by name. You can find them in most finger play books.

These help the children learn to rote count. (Remember, that is counting without knowing what they are counting—just saying the numbers.)

One, two, three, four, five,
Once I caught a fish alive.
Six, seven, eight, nine, ten,
Then I let him go again.

One, two, buckle my shoe;
Three, four, knock at the door;
Five, six, pick up sticks;
Seven, eight, lay them straight;
Nine, ten, a good fat hen.
(Some versions go to 20.)

One little, two little, three little Indians,
Four little, five little, six little Indians,
Seven little, eight little, nine little Indians,
Ten little Indian children.
(You can do this one backwards, too.)

Nursery Rhymes Using the Numbers One and Two

Hickory, dickory, dock,
The mouse ran up the clock;
The clock struck one;
The mouse ran down;
Hickory, dickory, dock.

Diddle, diddle, dumpling, my son John
Went to bed with his stockings on;
One shoe off, the other shoe on,
Diddle, diddle, dumpling, my son John.

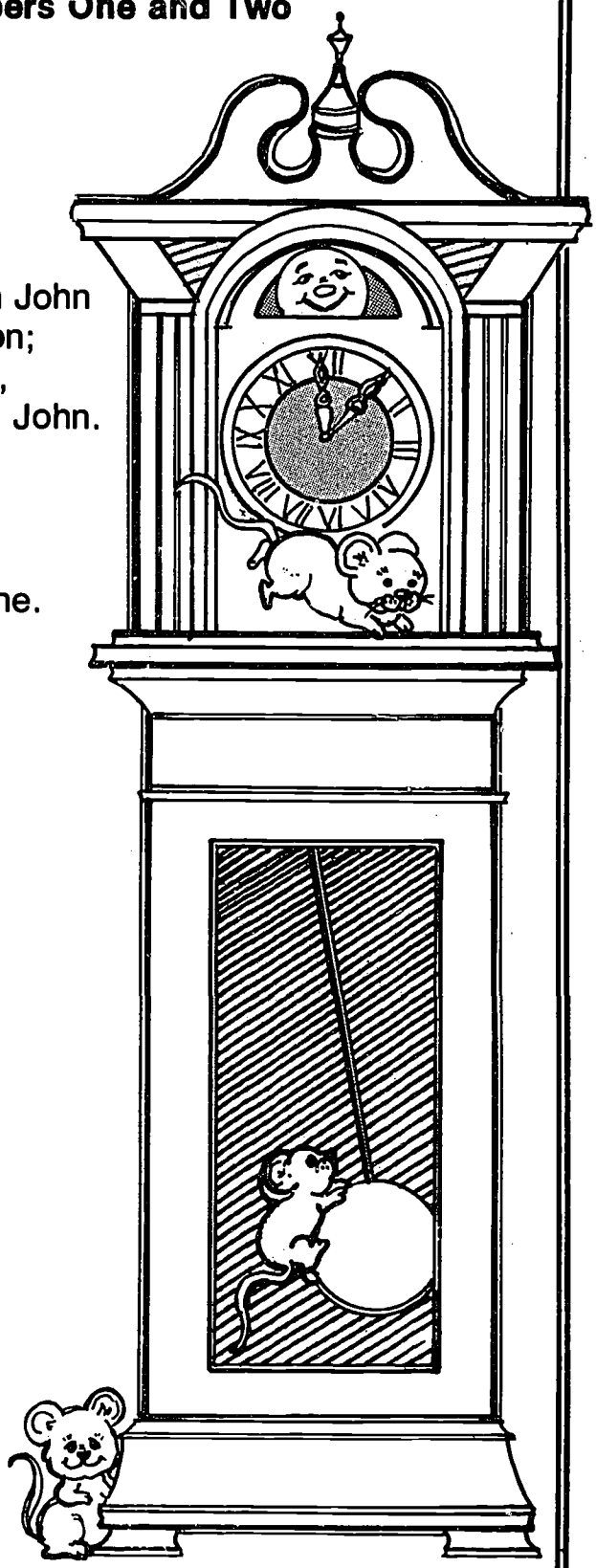
Baa, baa, black sheep, have you any wool?
Yes, sir, yes, sir—three bags full:
One for my master, one for my dame,
And one for the little boy who lives in the lane.

There were two blackbirds
Sitting on a hill,
The one named Jack,
The other named Jill;
Fly away, Jack.
Fly away, Jill.
Come again, Jack.
Come again, Jill.

There were two birds sat on a stone,
One flew away and then there was one;
The other flew after, and then there was none,
And so the poor stone was left all alone.

Hot cross buns!
Old woman runs
One a penny, two a penny,
Hot cross buns!
If you have no daughters,
Give them to your sons,
One a penny, two a penny,
Hot cross buns.

Cobbler, cobbler, mend my shoe;
Get it done by half-past two.
Do it neat, and do it strong,
I will pay you when it's done.



Nursery Rhymes Using the Number Three

Three little kittens they lost their mittens,
And they began to cry, "Oh, Mother dear,
we sadly fear,
Our mittens we have lost."
"What! Lost your mittens, you naughty kittens,
Then you shall have no pie."
Meow, meow, meow.
(You can find three or more verses in your nursery rhyme book or a book of *The Three Little Kittens*.

Three children sliding on the ice
All on a summer's day;
As it fell out, they all fell in,
The rest they ran away.

Three wise men of Gotham
Went to sea in a bowl;
And if the bowl had been stronger,
My song would have been longer.

Three blind mice, three blind mice.
See how they run! See how they run!
They all ran after the farmer's wife,
Who cut off their tails with a carving knife.
Did ever you see such a sight in your life
As three blind mice.

Rub a dub dub,
Three men in a tub;
And who do you think they be
The butcher, the baker,
The candlestick maker,
Turn them out, knaves all three.

Old King Cole was a merry old soul,
And a merry old soul was he;
He called for his pipe, and he called for his bowl,
And he called for his fiddlers three.

Now every fiddler, he had a fiddle,
And a very fine fiddle had he;
Twee tweedle dee, tweedle dee, went the fiddlers.
Oh, there's none so rare, as can compare
With King Cole and his fiddlers three!

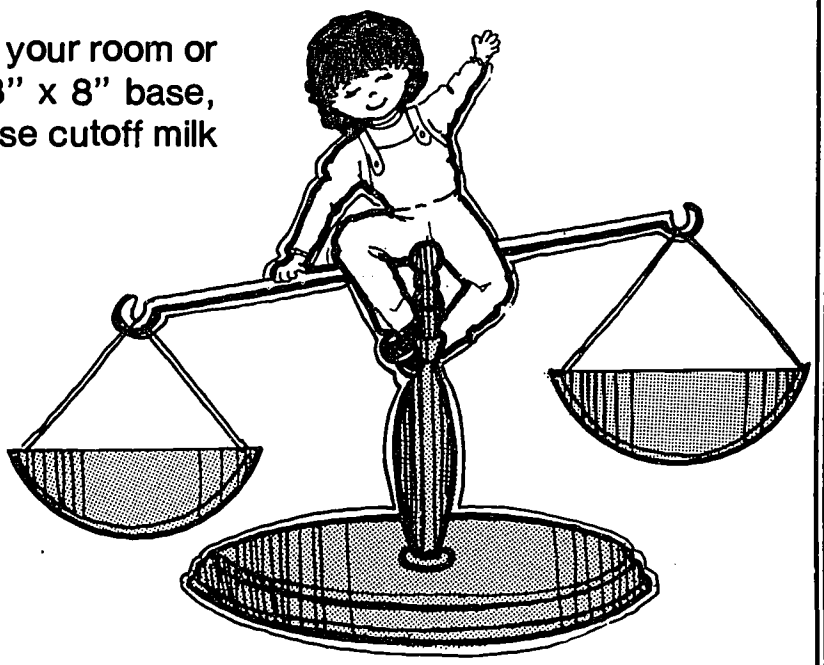
Measurement

Awareness Checklist for the Classroom

- Make sure that you have clocks in your room. It is best to have both a digital and a clock with a face.

- Be sure that you have rulers, yardsticks, tape measures, retractable tape measures in your room.

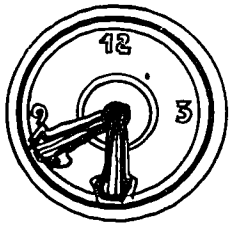
- Purchase a set of scales for your room or make an arm balance from an 8" x 8" base, 18" long 2" x 2", and an arm. Use cutoff milk cartons for the trays.



- Post a schedule in your room that tells the time of day that you do each activity. Place the clock face, the time, the activity and a picture of that activity.

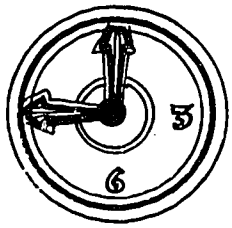
8:00

Breakfast



8:30

Circle Time



9:00

Centers

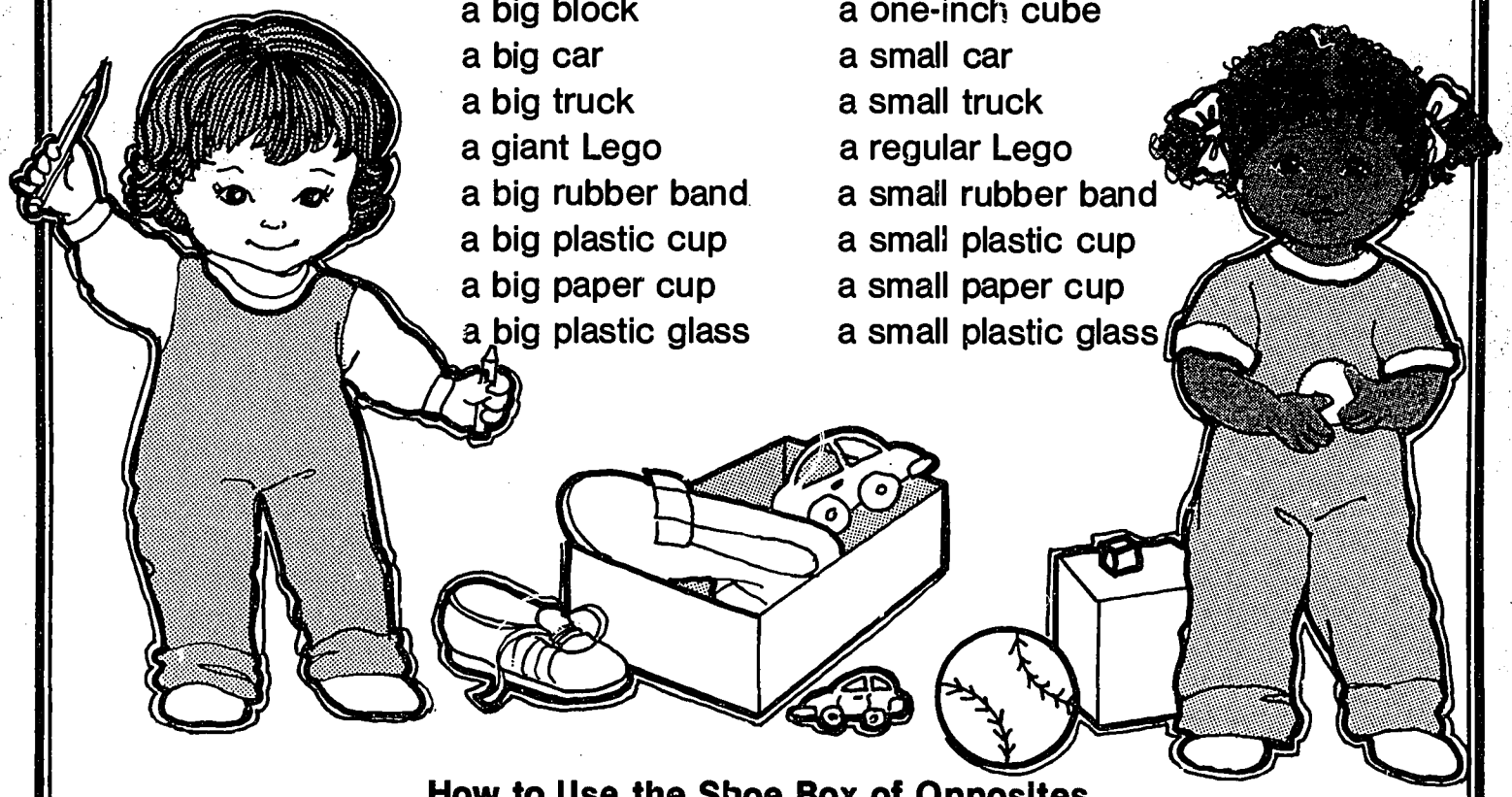
- Let children measure themselves, hands, feet, etc. Chart the results.

Measurement Activities

SHOE BOX OPPOSITES

In a shoe box put several pairs of things that are matched but one should be big and one little. For example:

a tennis ball	a golf ball
a big block	a one-inch cube
a big car	a small car
a big truck	a small truck
a giant Lego	a regular Lego
a big rubber band	a small rubber band
a big plastic cup	a small plastic cup
a big paper cup	a small paper cup
a big plastic glass	a small plastic glass



How to Use the Shoe Box of Opposites

During group time, dump the entire box of objects on the floor in the center of the circle formed by the children. Let the children tell you some things about what is in the box. If they come up with the fact that there are some big things and some little things, GREAT. If they do not, lead them in that direction.

Let each child choose one object. After each child has one object, start with one child and let that child hold up what he has selected. Ask if someone else has something that goes with that one.

Ask the two children to come to the front of the group and show what they have and say, "I have a big glass," or "I have a small glass," as they put their objects back in the shoe box.

After this is complete, put the Shoe Box Opposites in a manipulative center where the children may go and work on the things by themselves.

MORE SHOE BOX OPPOSITES

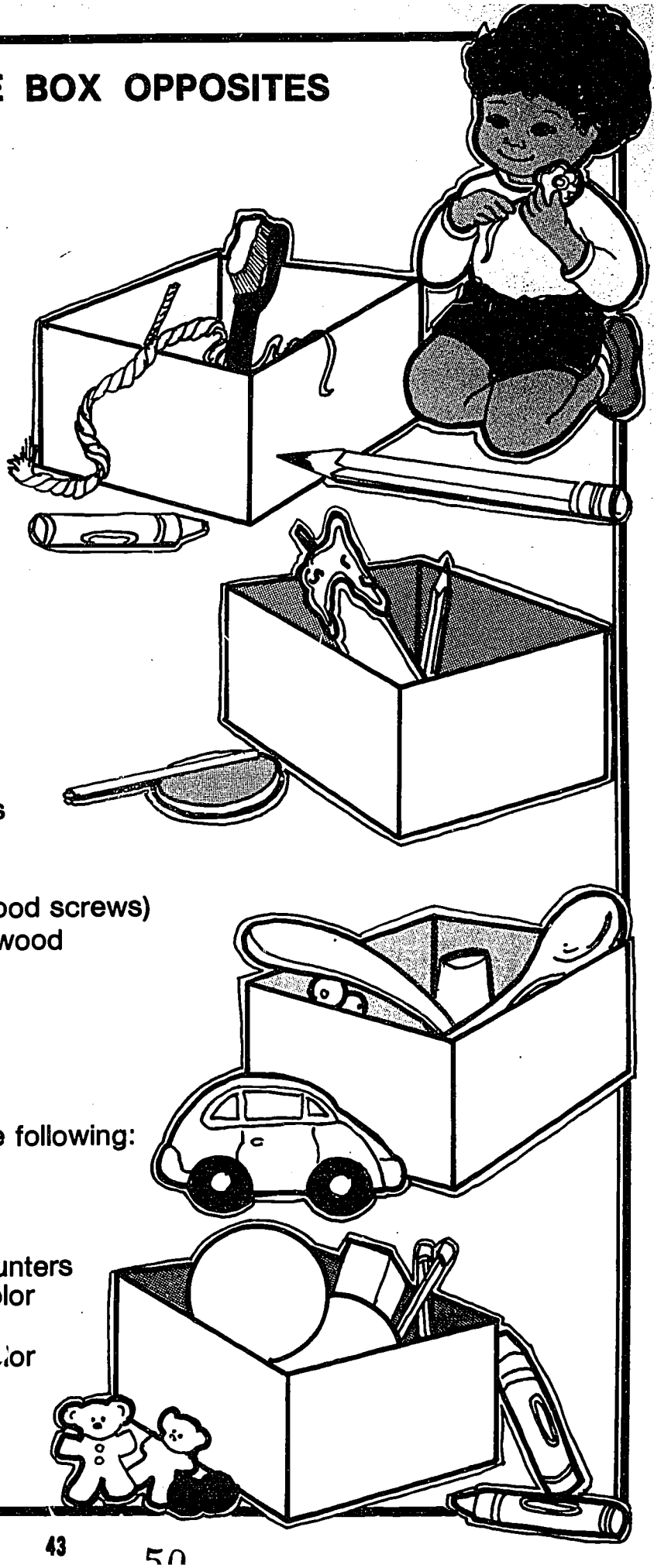
Long/Short
- pencils
- string
- rope
- crayons
- toothbrushes
- combs
- sticks
- flower stems
- pipe cleaners
- screws

Wide/Narrow
- paper
- wood scraps
- pencils
- jar lids
- candles
- dowel rods
- bolts

Heaviest/Lightest
- plastic cups
- styrofoam cups
- paper cups
- nuts/bolts
- screws (not wood screws)
- beads of lead/wood
- plastic spoons
- metal spoons
- plastic cars
- metal cars

Same

Two of each of the following:
- balls
- beads
- blocks
- teddy bear counters of each color
- kitty counters of each color
- crayons
- pencils
- erasers



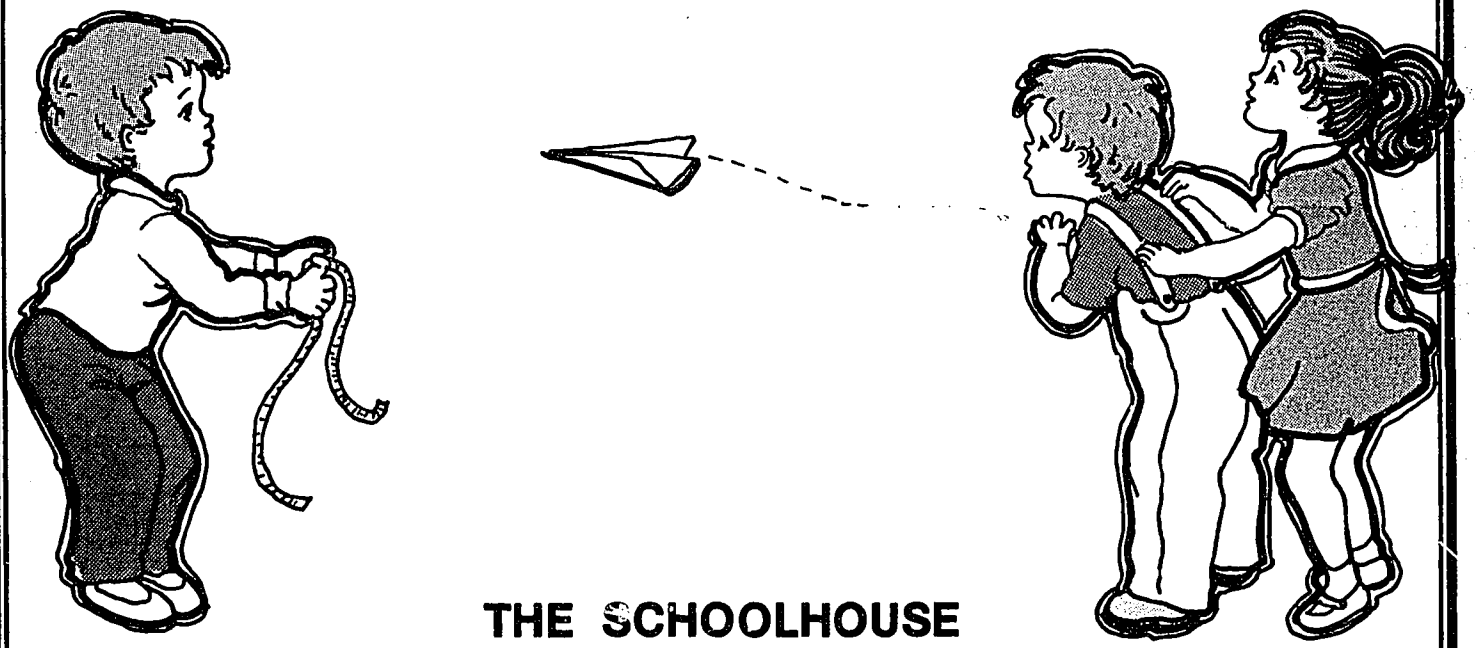
Extending Activities

Measurement

PAPER AIRPLANES

Paper airplanes are great fun to make. Let them make their own and set up an airport in the closest hall. Have a standing line and a measuring tape and let the children go to the airport in pairs. The first child throws his plane and holds the beginning of the measuring tape. The second child goes to the plane and records the distance in inches, feet and inches, etc. Exchange places.

For more sophisticated children, have them do this three or four times and add the three/four distances. And for even greater difficulty, average the distances.



THE SCHOOLHOUSE

Measure the playground, the school building and the distances between school and fences. Take the information and try to draw the building to scale with the play areas and the fence.

MEASUREMENT CENTER

Put measuring sticks, yardsticks, rulers, and tapes in a center with a conglomeration of objects: books, pencils, crayons, stapler, etc. Have the children measure the objects and record their results. Have them compare their results with a partner, and then remeasure if the results are not compatible.

Geometry

Checklist for the Classroom

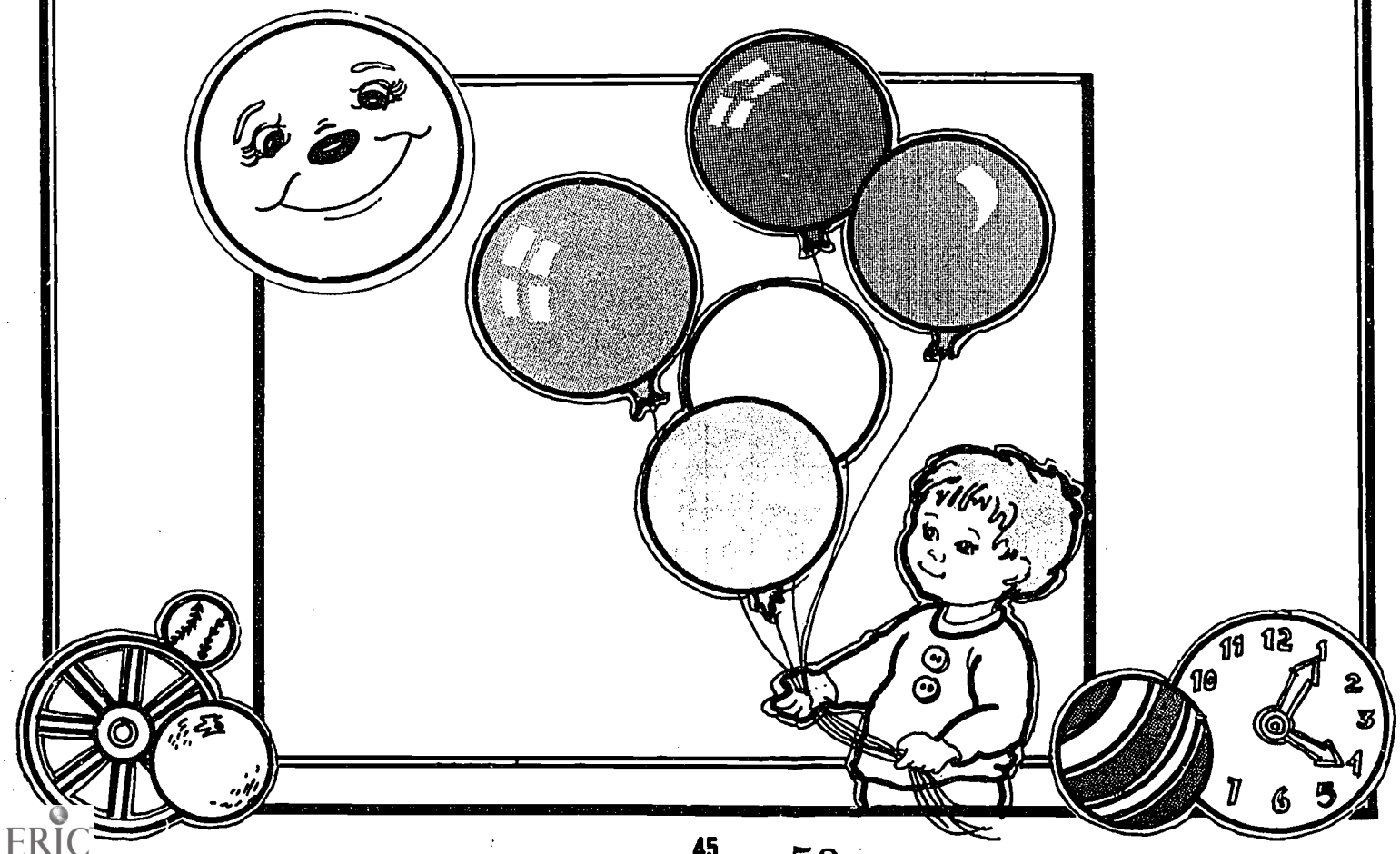
- Be sure that you have blocks of all shapes—circle, square, rectangle, triangle, oval (if you can), and for extra credit, hexagon and octagon.

- Be sure that children have plenty of appropriate puzzles to work on. They need some that are easy, some hard, and some just right.

- Buy a set of Hula-Hoops or hoops that the children can get into and out of.

- Get empty boxes of varying shapes and sizes for the classroom for obstacle courses.

- Put up charts of circles, squares, triangles, rectangles, and ovals and let the children complete them by finding things that are of that shape, drawing things that are of that shape or cutting out pictures that are of that shape.



Geometry Activities

Use each of the following two pages to make gameboards for the children. Cut the pages out and glue them to oaktag or poster board and laminate to save for years to come. Also cut out rings from construction paper.

Gather a shoe box full of familiar objects for the children:

ball	doll
pencil	mitten
block	

Make a tape that gives the children directions:

inside/outside

Put the ball inside the circle. (Wait 10 seconds.)
Put the pencil outside the circle. (Wait 10 seconds.)
Put the block outside the circle. (Wait 10 seconds.)
Put the doll inside the circle. (Wait 10 seconds.)
Put the mitten inside the circle. (Wait 10 seconds.)

in front of/behind

Put the ball in front of the soldier. (Wait 10 seconds.)
Put the pencil behind the soldier. (Wait 10 seconds.)
Put the block in front of the soldier. (Wait 10 seconds.)
Put the doll behind the soldier. (Wait 10 seconds.)
Put the mitten behind the soldier. (Wait 10 seconds.)

on/off

Put the ball on the clown. (Wait for 10 seconds.)
Put the pencil off the clown. (Wait 10 seconds.)
Put the block on the clown. (Wait 10 seconds.)
Put the doll off the clown. (Wait 10 seconds.)
Put the mitten on the clown. (Wait 10 seconds.)

Instructions for Presenting This to the Children

Have the two sheets, the rings and the box of objects ready. Gather a small group of children around you and place the two sheets and a ring in front of you. Dump the objects on the floor. Ask the children to name each of the objects and the pictures on the sheets.

Give each child an instruction similar to the ones listed above for the tapes. Make sure that they do what they are to do with the objects.

Turn on the tape recorder and have the children go around the circle following the directions on the tape.

Place the materials in a center where the children can use them by themselves. (Yes, the two-year-olds can be trained to use the tape recorder.)